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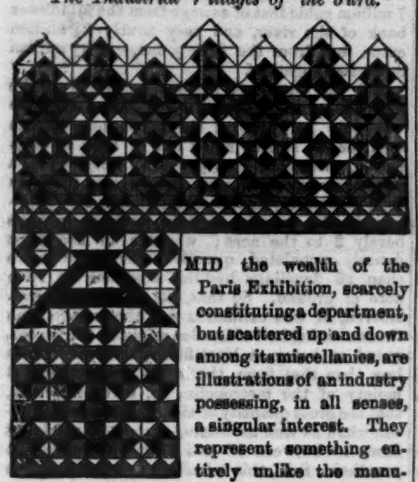
The Industrial Villages of the Jura.



MID the wealth of the Paris Exhibition, scarcely constituting a department, but scattered up and down among its miscellanies, are illustrations of an industry possessing, in all senses, a singular interest. They represent something entirely unlike the manufactures of great towns, and yet they are known all over the civilised world. Along the western slopes of the Jura are ranged a series of villages, some perched on the mountain summits, others buried in the deepest valleys, in almost each of which some particular occupation absorbs nearly all the inhabitants. The two principal, excepting one, the most curious of any, and presently to be noticed, are Saint Claude and Morez, each claiming to be an industrial centre. The first, pitched at the bottom of a precipitous ravine, is celebrated for its turnery, and "articles of Saint Claude" have a reputation at every fair and in every market-place throughout France. Nearly all the work done in the place is in wood, though ox-horn and bone, ivory and tortoiseshell, have of late years been added to the stock of native materials. This, however, has only been since the box-tree, the favourite material of the turner,—through an improvident waste,—almost wholly disappeared from the hill-sides of the Jura. Its place has been chiefly taken by the briar, which, grown in those districts, is capable of a brilliant polish, and exhibits a rich veining. In one substance or another, at any rate, the artificers of Saint Claude send out yearly, by thousands, children's toys, cups-and-balls, nine-pins, tops, and so forth; kitchen utensils, beads for chaplets, cotton-reels, wine-taps, snuff-boxes for the rural population, pipes, and other trifles endlessly various, which form the foundations of a far-spread and fertile industry. There is no necessity for the employment of steam-power. This is a country of waterfalls, and every torrent turns its wheel, by the aid of which the wood is cut in lengths, shaped into square or circular forms, joined, polished, hollowed, pierced, and improved; machinery is continually invented to assist it. The finer processes, however, are effected by lathes, worked by the foot, and when these are complete, they are handed to the women and children for varnishing or polishing. Still, in one way or another, the entire population appears to dwell in an atmosphere of ivory and bone shavings or sawdust; and it will never, if prevention be possible, admit a stranger into what are called the secrets of its vocation, though these, in reality, are no secrets at all. The earnings of the people are tolerably good; but their merchandise is sold at exceedingly humble prices to the traders, who arrive every season, and who often extract from the customer three farthings for that which has not cost them the tenth of a penny. Seventy-five per cent. is the customary difference, at all events, between a bit of turnery bought at Saint Claude, and the same bit priced for a Parisian bazaar. The artificers of the valley are a very simple race; they rarely invent new forms; their aim is to be eccentric rather than beautiful in their designs; and probably with respect to the peculiar industry followed by them they are in the right; but their neighbours of Morez are more ambitious. They are only planted at a distance of about twenty miles; yet the two villages carry on only a slight intercourse one with another. Neither do their compeers of Long Chaumais, La Mouille, or the other hamlets scattered near to them in the Jura vales.

Indeed, there is an almost total distinction between their lives and the industries they pursue. The Saint Claudian works upon wood; the Morezian, almost exclusively upon copper and iron, principally the last. The circumstances of his natural position do not allow him to attempt the establishment of great manufactures, for the production of such mechanisms as emanate from the foundries of Birmingham and Sheffield. He must be satisfied, therefore, with a lighter task, and seems, as it were, a clock-maker by instinct, chiefly on the principle of using weights. In nearly all parts of France,—in churches, town-halls, schools, factories, and railway stations,—the name of Morez will be found conspicuous, stamped or painted upon huge clockfaces, and these clocks have the character of being far more exact than those worked by springs. But this may be a a Morezian tradition. The manufacture spreads itself into many branches, as those for the turning out of wheels and bells, of cases and dials, of pulleys and hammers. It is only of late years that the novelty has been introduced at Morez of watch-making, and the experiment encountered a violent resistance from the ancient clockmakers of the mountains. They declared that it would effeminate their artisanship, destroy its unique fame, and expose them to a rivalry in which they might not be triumphant. They had only to climb the steeps of Faucille to perceive, lying below, the city of Geneva, with which they had no desire to enter into rivalry. This argument, in a great degree, prevailed, and Morez has maintained its renown for clock-work, without acquiring one for watchmaking. The villagers, however, carry on with much success two other industries,—the manufacture of opera-glasses and of enamel for the lining of China ware. They are more mechanical than their compatriots of Saint Claude; that is, they depend less upon simple hydraulic force, and put deep faith in the inventive genius of the times. Perhaps it will be admitted, therefore, that they rank somewhat higher in the industrial scale. But in both localities a similar division of labour exists. Thus women are employed to inscribe the hours of the day on the clock-faces, and, almost invariably, they take their taskwork home. It is on Sunday, as a rule, that the artificers go to their employers to give up what they have finished, and to apply for more. They may be seen, trudging in long files, with burdens on their backs, or, if these are too cumbrous, drawing immensely long and exceedingly narrow barrows, adapted to the narrow mountain paths, and it is customary to take away a fortnight's work, and receive a fortnight's payment, at a time. Upon an average they earn more, while their products are cheaper, than those who are so famous among the solitudes of the Black Forest. As for their customers, they are to be found in all parts of the world where clocks of this description are known,—far more widely spread, indeed, than those of America or Germany, ingenious and cheap though their fabrics be. In fact, works from the Jura frequently bear the imprints of Nuremberg and the ingenious cities of the New World.

But perhaps the most interesting of all these primitive, yet industrious, communities, is at Septmoncel, where the colony of lapidaries has its home. Their village is planted upon one of the most isolated plateaux of the whole mountain range, as if they were designed to dwell apart from the rest of mankind. They have not only a special industrial, but also a special social, organisation. By the generality of people in France, and, indeed, everywhere in Europe, their very existence is scarcely known, as though they had been lost, or forgotten; but their work goes on incessantly: it keeps alive the fires of many a hearth, and it feeds a large and constant demand throughout the world, civilised or savage. Rarely does a French,—never, in all likelihood, an English,—tourist, unless he is uncommonly constituted, penetrate through those solitudes up to that lonely village. The way, in the first instance, has to be trodden on foot; there are no guides or guide-books worthy of the name; the place has not been made sufficiently familiar to excite curiosity. Yet the industry of these mountaineers is certainly unique, so far as the hill districts of France are concerned, differing altogether from any carried on in the Forez, Vosges, or Auvergne regions. About 4,000 individuals, indeed,—men, women, and children,—are here engaged upon the cutting of precious stones. It is, in this respect, at once the Paris and the Amsterdam of the Jura, but the latter city is chiefly celebrated on account of its preparation of diamonds for use in jewelry. The lapidary of the Jura works, however, alone, with his family, in a little workshop, furnished with two wheels, at a rent of from about 2s. to 4s. for twelve hours' use of it and the machinery. He never touches a diamond; otherwise, every natural stone of value is welcomed by his hand, as well as those others artificially manufactured, which he can set forth in a manner to deceive all except the pro-

tically initiated. The lapidary of Septmoncel, indeed, often begins by fabricating the gem which he afterwards cuts and polishes; and it is marvellous how he can simulate at once the tint, the degree of hardness, and the weight, upon which, in genuine stones, the value, of course, depends. These ingenious villagers, as they are termed, although the centre of their abode resembles rather a township, recognise eleven classes of gems, giving the foremost rank to the diamond, which, however, as we have said, they do not profess to deal with; but, next to it, they rank, as colourless stones, the white sapphire, the white topaz of Brazil, and all the varieties of rock crystal. In succession, they prize the red qualities,—the many varieties of ruby, the garnet, and the crimson tourmaline; thirdly, the blue, comprising most of the sapphires, the beryl, or aquamarine, and second variety of tourmaline,—very rare at Septmoncel, at least. The colour green they hold to be represented solely by emeralds, whether Brazilian, Peruvian, or Oriental, regarding the apple-green crysolite and its kindred as mere mixtures; while, of the yellow, they acknowledge the topaz of that tint, the Singhalese crystal,—often mistaken for diamond,—and so on, through all the glittering list of crysoliths, amethysts, hyacinths, opals, moonstones, sunstones, the turquoise, agates, and an inferior family, which are not precious in the strict sense of the term, and include malachite, jasper, lapis-lazuli, cameo, and cornelian.

Whatever of these are destined to be operated upon at Septmoncel are received there from an agent. The local craftsman does not know whence, in the course of commerce, they come; he takes them in their rough state, executes his task according to exact instructions given, and returns them to the same agent, without the slightest idea of their destination. Of course, this kind of industry requires great experience, and an extremely delicate manipulation. The least excess in cutting may ruin a stone of the noblest quality, besides wasting so much of costly substance. Then, a discrimination has to be exercised with respect to the surface which shall be hidden in its bed of gold, and that which shall remain open to the light; besides which a flaw may have to be dissimulated beneath the angles of a facet, while the slightest inequality of polish may be fatal to the value of the gem. So that these Jura jewellers have responsible work to do. In order to do it, each has his wooden hut provided, within which are two wheels,—the one of lead, to cut, the other of copper, to polish. The man sits in front of this simple machine on a sufficiently low stool; with his left hand, by means of a crank, he turns the wheel; with his right he holds the stone firmly fixed to a little rod; but it is needless to dwell upon details well known to the lapidary everywhere, for the mechanics of this industry vary little, except with regard to the complexity of the machinery employed. It is the condition of the isolated Septmoncel lapidaries which, perhaps, suggests a more interesting topic. Their toil is not severe, and their health is generally excellent, unless when a colic breaks out through the perpetual action of the leaden wheels, though this can be usually avoided by the use of precautions quite familiar to these mountaineers. The lapidaries are nearly always men, women being considered as unfitted for this industry; but boys commence their apprenticeship at the age of ten or twelve years, upon the softest and most easily-wrought stones. Wages are not paid by the day, but in proportion to the result; so that the workman may employ himself during as many or as few hours as he pleases, and with the lapidary of Septmoncel, these frequently number fifteen or sixteen for the day. It is difficult, consequently, to infer an average of earnings on the part of this singular community. It cannot even be estimated in proportion to the time which he devotes to his labour; for he may be either a slow or a swift workman; but it may be said, generally, that the cost of cutting a precious stone in this Jura village amounts to about a tenth of its value, with regard to the inferior qualities. With the higher it is less. Upon the whole, an estimate may be taken at 1s. 6d. a day for men, 1s. for women, and from 2d. to 6d. for children. That is,—the Septmoncelais earn about one-fourth of what is earned by the lapidaries of Amsterdam, though the work of these latter is, undoubtedly, more important and more difficult. Yet the former exhibit no appearance of discontent or misery; they inhabit comfortable abodes; their furniture and clothing are alike respectable. On the other hand, they are intensely frugal, rarely consuming meat, or wine, or fruit, or even bread, but subsisting, for the most part, on black oat-cakes, potatoes, and milk, with an occasional addition of most inferior cheese. And these folk pass their existence with jewels of one kind or another in their hands, yet neither understand their value nor ever seem actuated by the smallest desire to possess them. These lapidaries of that Jura table-land form, in all respects, a remarkable community. They would seem to be possessed by an implicit trust in one another, to be vexed by neither litigation nor mendicancy; to fear no thieves; and to be implicitly confided in by employers, who scarcely know them, and whom they scarcely know at all. On the other hand, they are exposed to few temptations, are totally ignorant of the outer world, but still have built up a society of their own, in which the rules of labour are not less respected than those of morality. It is by these means that they have been enabled to hold their ground against many rivals who have sprung up, with the advantage of superior machinery. However this may be, the result is undeniable, because the lapidaries of the Upper Jura, if they have not grown richer, have certainly not become poorer, within the last century; and their industrial annals, with those of the other "villagers" we have noticed, have an interest, not apart, but different from, those of other industrial organisations, no matter in what quarter of Europe.

THE "CLOACA MAXIMA" OF LONDON.

We resume our account of the Herculean task of cleansing the Augean four-million-stalled stable of this *very* "great metropolis."*

We have already shown that, by some strange coincidence, the *natural* and the *artificial* supplies of water to London are as nearly as possible tantamount each to the other; that is to say, that the average quantity of rain descending daily upon the 78,000 and odd statute acres which make up the entire metropolitan area is within a fraction identical with that of the water provided by the several companies, artesian wells, and land springs, to the half a million inhabited houses gathered within the boundary of the capital; and that, whereas rather *less than one-fourth* of the gross metropolitan rainfall goes to swell the volume of the London sewage, under ordinary circumstances, still very nearly the *whole* of the water supplied to the metropolitan dwellings for domestic use, as well as that furnished to the factories for trade purposes, is returned in the form of "sulliage" (far out of the range now of urban London) to the Thames,—at Barking on one side of the river, as will hereafter be seen, and at Crossness, adjoining the Plumstead Marshes, on the other. We have shown, moreover, that the rain unabsorbed by the soil of the gardens, the squares, the parks, the fields, the commons, the heaths, the greens, the "downs" (such as Hackney Downs), and other open grounds, which still constitute what are well termed the "lungs" of London,—we have shown, we say, that the rain, unabsorbed by these oases in the great brick-and-mortar desert, enters the sewers principally in the form of wet street-refuse; whilst the water supplied by the metropolitan companies is carried off by the house-drains, in some sullied form or other, mainly as wet house-refuse; and that whereas the average quantity of the one cannot amount, unless in the case of exceptional rain-storms, to more than 130,000 tons, or 4¾ million cubic feet, daily, that of the other can hardly be less than 550,000 tons, or 19¾ million cubic feet, per diem.

Let us, however, check this estimate by others, or rather by the measurements which have been taken as to the absolute quantity of sewage passing daily through the London sewers. Well, in the summer of 1844, long before the present system of "main intercepting" sewers was even thought of, an experiment was made as to the amount of discharge from 8 of the principal outlets for sewage situate between Chelsea and the Temple. The issue from the more important sewers in the Westminster district was found, from "the mean of seven observations taken during the summer," to be, in round numbers, 1,800,000 cubic feet in twenty-four hours, while the number of acres drained was ascertained to be a fraction more than 7,000 (= 12½ square miles); so that the average discharge per acre per diem amounted to about 250 cubic feet for a space comprising the urban as well as suburban parts of the capital. This quantity of sewage was derived almost entirely from *artificial* sources, or house-drainage, for there had been little or no rainfall at the time; whereas the greatest sewer-flow is always, of course, during the wet weather. It was, therefore, after other and similar experiments, assumed officially that the average discharge of the urban and suburban sewage from the several districts included within an area of 58 square miles is equal to 256 cubic feet per acre, or 164,000 cubic feet per square mile per diem. Hence, as 43 of the 58 square miles comprised in the before-mentioned calculation were situate on the northern side of the Thames, and the remaining 15 on the southern side, it was computed that, at the time of making the experiments, there were discharged *daily* into the Thames, *in the very heart of London*, rather more than 7 million cubic feet of sewage from the Middlesex bank of the river, and very nearly 2½ million cubic feet from the Surrey one,—or 9½ million cubic feet together.

But the extent of surface estimated to be drained by the sewers in the above instance was only half that of the gross metropolitan area, or 58 square miles out of 115. It comprised, moreover, that portion of London which was more crowded with houses and factories than the purely suburban districts. The buildings in the extreme suburbs, however, average barely 2 to the acre; whereas in the most densely-populated quarters there are more than 25 dwellings huddled together on each acre of ground. So that, all things duly considered, it was estimated that the sewage from the remaining half of London might be fairly computed as being at least fifteen to twenty times less than that from the more thickly-peopled moiety of the metropolis; or, in other words, that the gross quantity of metropolitan sewage,—suburban as well as urban,—might be safely set down at between 10 and 11 million cubic feet per diem. Still, this calculation was made in the year 1844, rather more than thirty years ago, when the water-supply, from all sources, was but 55 million gallons daily; whereas the year before last it amounted to as much as 113 and odd million gallons, or upwards of 100 per cent. more. Hence, as the wet house-refuse must have increased in the same ratio, the present quantity of sewage ought to be about 21 million cubic feet every twenty-four hours, irrespective of the surface-water from the streets. Nevertheless, according to the estimate given in the preceding article, it cannot be more than 19¾ millions. The numbers, however, approximate so closely, that, allowing for the difficulty of precise measurement in the one case, and of precise calculation in the other, they may be fairly taken as being near enough to the truth for all present purposes.

But Sir Joseph Bazalgette, in his account of "The Metropolitan System of Drainage," published in 1865, puts the question as to quantity entirely at rest; for he tells us authoritatively that "the sewage on the north side of the Thames at present amounts to 10 million cubic feet per day, and on the south side to 4 million cubic feet," or 14 million cubic feet together; "but provision," he adds, "is made for an anticipated increase up to 11½ millions on the north side, and 5¾ millions on the south side." Still, in '65 the average daily water-supply was hardly more than 20 gallons per head; whereas it is now nearly 26 gallons, or 30 per cent. greater. So that if the gross amount of sewage was 14 million cubic feet per diem ten years ago, it must, according to Cocker, amount to at least 18½ millions at the present time. Hence, allowing for leakage, absorption, and evaporation, the numbers agree sufficiently well to show that there can be no very great error either in the estimate or the measurement. The gross quantity of the London sewage, then, irrespective of the surface-water of the streets, may be taken, in round numbers, at somewhere about 20 million cubic feet per diem; and this derived from half a million houses, gives 40 cubic feet, or, within a fraction, 260 gallons, as the average amount of wet refuse from each building, including factories as well as dwellings, throughout London.

So much for the *quantity* of the London sewage; and now as to the *quality* of it, in order that we may form some notion concerning the nature and uses of it. First, concerning the noxious character of the London sewer-water, and hence the vital necessity for removing the

* See p. 1073, *ante*.

sewage far away from the immediate neighbourhood of the metropolis. Dr. Arthur Hill Hassall said in his examination before one of the Parliamentary Committees on the subject,—"I have examined microscopically the water of several of the principal sewers of London, and detected in it but few forms of animal life,—those encountered for the most part being a kind of worm or '*annelid*,' and a certain species of animalcule of the genus '*monas*.' The absence of animal life is doubtlessly to be attributed in a great measure to the large quantity of sulphuretted hydrogen gas which is contained in sewer-water, and which is continually being evolved by the decomposing substances included in it. With a view to determining whether or not the sulphuretted hydrogen in sewer-water was present in such large quantity as to be prejudicial, and even fatal, to animal life, I made the following experiments:—A given quantity of Thames water known to contain living *infusoria* was added to an equal quantity of sewer-water, and when examined *a few minutes afterwards*, the animalcules were found to be either dead, or deprived of locomotive power, and in a dying state. A small fish placed in a wineglassful of sewer-water immediately gave signs of distress, and after struggling violently, floated on its side, and would have perished in a few seconds, had it not been removed and plunged into fresh water. A bird was encaged in a bell-glass jar, into which the gas evolved by the sewer-water had been allowed to pass, when, after struggling a good deal, and showing other symptoms of the action of the gas, it suddenly fell on its side, and although immediately removed into fresh air, was found to be dead..... I infer from these experiments that sewer-water, such as is contained in the Thames near London, is prejudicial to health; and I regard the Thames in the neighbourhood of the metropolis *as being nothing more than diluted sewer-water!*"

But if sewer-water be so prejudicial to animal life, what says chemistry as to its probable benefit to vegetable life? Professors Brande and Cooper obtained from one gallon (10 lb. = 7,000 gr.) of sewer-water, when evaporated to dryness, 85·3 gr. of solid matter, of which 74·8 gr. were again soluble, and the remaining 10 gr. insoluble. The 74·8 gr. which were resoluble were found to consist of a *large quantity of organic matter*, besides some potash and soda, with 10 gr. of chlorine, 6½ gr. of lime, 3½ gr. ammonia, and a small proportion (barely 1 gr. together) of sulphuric acid and phosphate of lime. The 10½ gr. which were insoluble yielded, on the other hand, rather more than 6½ gr. of sand, not quite 2½ gr. of the phosphate of lime, and barely 2 gr. of the carbonate. From another gallon, evaporated to dryness, the solid matter weighed 55 gr., of which nearly 21½ gr. (not quite half, mind) were combustible, "*being composed of animal matter rich in nitrogen*," some vegetable matter, and a quantity of fat; while the remaining 33½ gr. consisted of 21½ gr. sand, barely 7 gr. phosphate of lime, with a small proportion of chalk and plaster of Paris, and 2 gr. of oxide of iron,—the sand and earthy matter having been derived, as other evidence showed, from the "mac" and mud, combined with the mortar or concrete which had come from the pavement, and which had been washed from the surface of the streets into the sewers. Other analyses exhibited merely such variation in the results as was inevitable from the state of the weather at the time when the sewer-water was collected. Thus, then, we find that sewer-water yields, when evaporated to dryness, about 5 gr. of solid matter, or "manure," as it is called, to every 500 of the liquid (Mr. Smith, of Deanston, calculated the yield to be 1 to 500, or about 4½ lb. per ton), and that of this solid matter or manure *rather more than one half consists of those constituents which are known to possess the highest fertilising properties.*

And now let us compare the above results with the chemical constituents of guano, of the fecundating virtues of which there cannot be the least question. According to the analysis of the best kinds of Peruvian guano (which is second only to that of "Angamos" in the quantity of ammonia which it contains) the average proportion of ammoniacal salts found in that form of manure is 50½ per cent., while the salts of lime are rather more than 22¾ per cent., those of potash 4½ per cent., and the soda salts not quite 2 per cent. Hence it follows that the organic matters and ammoniacal salts found in the "manure," obtained by evaporating sewer-water to dryness, are as nearly as possible equal to those present in the best kinds of guano, and considerably more than those contained in the guano from Ichaboe, in which the nitrogenous elements do not exceed 40, and are often but little more than 30, per cent. Moreover, the phosphates in sewer-water rank as high as 20 per cent. (or 6·81 gr. in 33½ gr. of the ash), whilst in Peruvian guano they are but 23·48 per cent., in that from Angamos only 17, and in the new guano from Ichaboe not more than 19½ per cent. Consequently, according to chemistry, the "*manure*" *obtained from sewer-water ought to be possessed of at least the same fertilising properties as even Peruvian guano itself.*

Such, then, are the quantity and quality of the London sewage. There are not only 20,000,000 cubic feet, or upwards of 500,000 tons, of it to be got rid of every day; but they are 500,000 tons of a substance which, if there be truth in agricultural chemistry, should be every bit as valuable as Peruvian guano, containing,—as the residue of sewer-water does, after being evaporated to dryness,—as nearly as possible the same per-centage both of ammonical salts and phosphates as the most prolific manure.

But we must pass now from the *sewage* itself, or matter to be got rid of, to the consideration of the *sewerage* or means of getting rid of it. The question is, how are 20,000,000 cubic feet of stuff (we use the fine old Saxon word in its fine old Saxon sense) to be disposed of every day,—of stuff, too, which, if allowed to rot and fust under the noses of the people, is sure to poison the air, and if discharged into the nearest stream, as sure to poison the water imbibed by the community? Now, just try to comprehend what a vast volume 20,000,000 cubic feet of liquid really is. Why, it would require a tank 10,000 ft.,—very nearly two miles long, by 100 ft. broad, and 20 ft. deep,—to contain it: a capacity which is more than sufficient to float an entire navy; and, bear in mind, that this same tank would have to be filled with the most filthy, loathsome, and poisonous mass of corruption known to human nature. It needs, indeed, the same large social machinery to remove the fluid and solid refuse of a large community as it does to provide them with food and drink. If what they digest in the aggregate has to be thought of, what they egest in the aggregate has to be considered also. It is said that this monstrous London, which cannot grow a blade of wheat, or hardly feed a sheep, to support itself, never has a stock of provisions within it sufficient to keep the people for more than three or four days together; but, be that as it may, it is certain that, were there not some rapid and effective means of carrying off the refuse of four millions of human organisms, the ordure from such a vast flock of wingless bipeds would soon form a far greater deposit than even the immense beds of guano left by the countless generations of birds in South America.*

Now, there are several more or less obvious means of disposing of the refuse of a population. The first is the rude and ready mode still practised by many a Continental, and so-called civilized, community, viz., of ejecting it in the public thoroughfares, and leaving it to be removed or not, as it may. The second is to dig a large hole in the immediate vicinity of every household, and then, by means of a series of bricken tubes or earthen pipes, leading from the dwelling to the vile reservoir, to carry off into it all the feculent "slops" of the family, and there to allow them to remain seething and putrifying under the very nostrils, and within range of the lungs, of the young and old, the women and children, until such time as the filthy tank is full to overflowing. This constituted the disgusting system of cesspoolage which (one would hardly credit it) prevailed in this great capital of ours till within a quarter of a century ago, and which still prevails in Paris,—"*la cité*,"—as the French delight to inform you, "*qui est la plus civilisée du monde.*" The third method is to shoot the liquid and semi-liquid house-refuse into some drain or channel, such as an open or covered ditch or watercourse (or, what is close akin, some sewer), having a greater or less fall to the nearest river, and thus allow it to discharge itself, by the simple flux of gravitation, into the adjacent stream; there to be carried backwards and forwards by every ebb and flow of the tide (if the said stream happens to be a tidal one), and thus to become eventually so thoroughly mingled with the fluid from which the population is sure to derive its principal water supply, that the very liquid which the people use for drinking, cooking, washing, and brewing purposes is destined, sooner or later, to become a turbid and fœtid mess of so much "*diluted sewer water*,"—water that has been shown to be so prejudical to animal life that even the very animalcules which live and thrive in stagnant pools are killed by it *in a few minutes*, in which fish are immediately poisoned, and which is for ever evolving such a miasma of sulphuretted hydrogen that birds encaged for a short while in a bell-glass jar filled with the gas from it, flutter their wings, and die, even though removed, on the first symptoms of distress, into the pure and uncontaminated atmosphere. Such was the system of sewerage prevalent in this great and "enlightened" metropolis (one would hardly credit it, we repeat) until A.D. 1859, not a score of years ago; and to this system, there is hardly any doubt, may be mainly ascribed the intense virulence of the cholera which made a plague-spot, and almost a charnel-house, of London in the years 1848–9 and 1853–4, when nearly 20,000 persons fell victims to the poisoned air and water at each visitation of the pestilence. The fourth method is to carry the entire wet-refuse of the capital, by means of covered channels, miles away from the *heart* of the capital itself, and to discharge it into the river at a point so far "below bridge" as to be beyond tidal influence, and thus prevent the possibility of its returning to pollute the stream and the atmosphere from which the people derive their daily supply of the water and the air on which they live. This constitutes the present system of what are called the "main intercepting sewers," which, by crossing at right angles, and at a slightly lower level, the old main sewers leading to the Thames are arranged so as to relieve them of their contents on their passage to the river; and then to carry the sewage, by means of fitting inclinations to the conduits on the "high level," and by suitable lifting stations at those on the "low level," to appointed "outfalls" situated on the opposite shores of the metropolitan stream, at the extreme outskirts of the metropolis itself.

Now, these four different modes of getting rid of the liquid and semi-liquid refuse of a city differ only in two essential particulars. By the first pair of methods the refuse is kept in the immediate vicinity of the homes of the people, and removed only *periodically*; by the last pair, however, it is carried off by means of conduits, more or less *directly* to the neighbouring stream, and discharged, in the one case, into the river, in the very heart of the capital, as we have said, but, in the other, at the extreme boundary of the metropolis. *Still, removal, sooner or later,* is the sole object. The refuse is not only a nuisance, but (we are at length beginning to understand) a danger as well, to have near us; therefore, it must be got rid of, and be carried, not alone, as formerly, to the nearest point of the adjacent river, but, as at present, so far away that there may be less chance of its offending or harming the people for the future. But to convert the bane into a boon,—to transmute the deadly poison into strengthening food,—to give a commercial value to that which we now cast away as worse than worthless,—in a word, to apply the refuse to the beneficent uses for which the Almighty intended it, is a "consummation" which is *still* "devoutly to be wished." Let us, however, *not* rest, but "be thankful." We have got rid, *pro tempore*, of our refuse from under our very noses,—we have stopped it poisoning the water we drink and the air we breathe; and now all that remains to be done is for some ingenious chemical philosopher to discover an easy and inexpensive process by which to make that which we at present fling into the sea the future means of giving so much more bread and beef to the people.

Who invented sewers?—*i.e.*, covered or subterranean conduits for the removal of the wet-refuse from the immediate precincts of a town,—and when were they originally instituted? is almost as profound an architectural mystery as who laid the first stone of the Egyptian pyramids. All we know is that the celebrated "*Cloaca Maxima*" of ancient Rome is the earliest example of such a structure extant; and *that* is said to have been built by the second Tarquin, better known as "*Tarquinius Superbus*," who succeeded Tullius Servius as king of Rome, after the said Servius had been inhumanly murdered by his daughter Tullia and this same "Tarquin the Proud," B.C. 534, more than 2,400 years ago. But as Livy tells us that "Tarquin sent for artists from every part of Etruria for this and

* The term *guano* is in Spanish also written *huano*, and this is derived from the Peruvian word *huanu*, which signifies *dung*.

his other public works," it seems highly probable that the Roman Cloacæ were really of *Etruscan* origin. Be that as it may, there is not the least doubt that the stone of which the great Roman sewer is built is a proof of the great antiquity of the work; for it is not the "*peperino*" of Gabii and the Alban Hills, which was the building-stone in ordinary use at the time of the Republic; but consists of the "*tufa litoide*" of Brecchi, one of the volcanic formations, and *that* material is found only in the more ancient Roman constructions. The great Cloaca, we are told, cost 1,000 talents of gold (about 190,000*l.* of our money); it was formed with three arches, one within another, — the innermost being about 14 ft. in diam., and each of the hewn blocks just upon 5½ ft. long, and 3½ ft. high, and joined together with cement. The main arch, which is still existing, is one of the oldest examples of the use of the key-stone; indeed, from this very circumstance many architects of eminence have been induced to refer the date of the structure to a much later period. From the above-mentioned dimensions it will appear by no means incredible that a wagon laden with hay should have been able, as stated by Strabo and Pliny, to pass down the principal archway; still, it should be borne in mind, as has been well observed, that the vehicles of the Romans were much smaller than our own. Nevertheless, it is beyond question that this great sewer drained, not only the valley between the "seven hills," but the low grounds about the Palatine and the Capitoline. It crossed the Forum beneath the pavement, and extended to the Tiber; thus serving to remove the surface-water, not alone from the adjacent country, but the streets of the city as well. Moreover, Dion Cassius states that Agrippa, when he cleansed the sewers, passed through them in a boat, to which circumstance Pliny probably alludes in his expression "*urbs subter navigata*" (the subterraneanly-navigable city); and the extraordinary dimensions of these underground passages, as well as that of the embouchures through which the waters poured into them, are still further attested by the fact that it was a project in the days of Rome's greatness to turn *seven* navigable rivers into them, so that barges might continually pass along the covered canals, and thus carry on the traffic of Imperial Rome. But the term Cloacæ (which, as Pliny tells us, was derived from the ancient verb *cloare*, or *cluere*, to wash, cleanse, or purify) was not only applied to the spacious subterranean vaults which were used to carry off all the streams brought to Rome by the aqueducts, as well as all the sewage from the dwellings in the capital, to the neighbouring Tiber, but it was also given to any smaller drain, formed either of wooden pipes or earthen tubes, with which almost every house in ancient Rome appears to have been supplied, in order to discharge its refuse into the sewer. For the entire capital, according to Pliny, was so undermined with these intersecting submerged conduits that he terms it "*urbs pensilis*" (the suspended city) in his enthusiastic description of the ancient Cloacæ. Hence, there can be no doubt as to the old Roman sewers having been main drains, rather than simple watercourses.

When sewers were first instituted in this country it is difficult to discover, owing to the word having been originally applied to conduits for water, instead of channels for that form of sulliage to which the title of "*sewage*" is now given. Indeed, the old English term for a *sewer* was simply a *sew*; and, accordingly, in "Nare's Glossary" we find "*sew*, a sewer," with a quotation appended from the "Nomenclator," of 1588, in which it speaks of "*l'esgout d'une ville*" as being "the town sinke,—the common *sew*." So in Halliwell's "Dictionary of Archaic and Provincial Words," we have to "*sew*, to drain land," and a "*sew*, a covered drain or wet ditch," as well as to "*sie*, to strain milk" and a "*sey*, a skimming-dish." Now, according to Webster (Goderich's edition), the Teutonic original of the old English verb to "*sew*, to drain, as a pond for taking fish," was the Gothic *seon* and Anglo-Saxon *sihan*; and the latter Bosworth explains as "to strain, or sile, and in Derbyshire to *sie* (*percolare*),"—the Icelandic equivalent for this being (*vide* Cleasby's Dictionary) *sia* (að) to filter, while the noun *sia* or *sifa* (which is but the Scandinavian form of our word *sieve*) signifies either a sieve for flour, or strainer for milk; as *mjölka sia* (used in dairies), a milk-strainer; so that the word meant originally either a sieve, strainer, or *drainer* (as a skimming-dish), and hence a drain or "sew," and as we have to drain, a drain, and a drainer, even so had we formerly, *to* sew, a sew, and a sewer.*

Hence, it is evident that the old word *sew*, or *sewer*, originally meant merely a *sieve* or *sifter*, when applied to solids like flour; and a *strainer* or *drainer* in connexion with liquids, like milk, *i.e.*, something wherewith to discern the coarser from the finer particles in the one case, and in the other to separate the solid particles or impurities from a fluid,—rather than signifying, as it does now, a conduit into which such impurities are intended to be cast. Accordingly, in the early English documents relating to sewers, we find them spoken of mainly as *watercourses*, and certainly *not as drains* for the reception of the city's filth. Indeed, Stow, whose description of London was published towards the end of the sixteenth century, never in any way alludes to a sewer as being such as we at the present day understand it:—a covered submerged channel for the sulliage of the houses, the factories, and the streets. Even in his account of the Fleete Ditch he tells us only of the sums continually expended by the "*Maiours*" to keep the "course" clean; and informs us that "before 1569 the said Ditch lay open, without either Wall or Pale, having therein great Store of very good Fish, of divers Sorts, as many men yet living, who have taken and tasted them, can witness,"—a circumstance which, it has been shown, could not possibly have happened had the said Ditch been merely a common sewer; seeing that sewer-water is fatal to all forms of animal life. Moreover, the same trustworthy old chronicler records the fact that at the beginning of the fourteenth century (35 Edward I.) Henry Lacy, Earl of Lincoln, "complained to the Parliament, then holden at Carlisle," that "whereas in times past *the Course of Water* running at London, under Oldborne Bridge and Fleete Bridge into the Thames, had been of such Breadth that ten or twelve Ships' Navies at once, with Merchandise, were wont to come up to the aforesaid Bridge of Fleete, and some of them to Oldborne Bridge as well, now *this same Course*, by reason of the Filth of the Tanners, and such other, is sore decayed; but especially by a Diversion of the Water made by them of the new Temple, in the first Yeare of King John, for their Mills standing without Baynard's Castle, and divers other like Impediments; so that the Ships cannot enter as they were wont, and they might." Further, Stow, writing somewhere about 1582–90, assures us that "at this Day there be no Ditches or Boggs in the City, except the Fleete Ditch; but, instead thereof, there be large common Drains or Sewers, *made to carry away the Water* from the Postern Gate, between the Tower-hills to Fleete Bridge without Ludgate." Hence, it is manifest that, in Stow's time, Sewers and common Drains were merely, as we have said, watercourses, *i.e.*, channels made to carry away surplus water rather than filth. Indeed, in the year 1218, the Fleete, which was then called the "River of Wells," being fed by several springs, from which originated the names of the neighbouring districts now known as "Sadler's Wells," "Bagnigge Wells," as well as "Clerkenwell" (literally the Clerks' Well—so called from its being the custom of the parish clerks of the City to meet in that neighbourhood once a year, and give before the Lord Mayor and Aldermen theatrical representations of certain parts of Scripture)—this "River of Wells," we say, which afterwards came to be called the "Fleete" (probably from the swiftness of its current in the olden time), is known to have supplied with water, at the beginning of the thirteenth century, the people who resided west of Chancery-lane and were then styled "Foreigners." So particular, too, were the authorities at that date as to the preservation of the purity of the stream that in the year 1307 the mills before referred to as standing "without Baynard's Castle" and belonging to "them of the new Temple," concerning which the Earl of Lincoln had complained to the Parliament "then holden at Carlisle," were removed on the ground of their *disturbing*, as well as diverting, the stream. Further, the waters from a spring at "Tye Bourne," situate in the locality now known by the grand title of "Tyburnia" as well as those of the Bays-water Brook, now called the "Ranelagh Sewer," were conveyed in 6-in. leaden pipes into the neighbouring houses.

In fact, many, if not most, of the main valley lines of sewers—such as the "Ranelagh," "The King's Scholars' Pond," the "Fleet Ditch," &c.—were formerly merely open brooks, ponded up, at various points along their route, so as to form ornamental waters in the pleasure-grounds of the nobility and gentry resident in what was then considered to be the "rural" portion of the metropolis. For, it is on record that, even as late as 1730, Queen Caroline, immediately after the accession of her husband, George II., to the throne, fed the ornamental water in Kensington Gardens as well as the Serpentine in Hyde Park with the stream from the Ranelagh Sewer, which ultimately, however, so polluted the lake that it had to be diverted, a few years ago, by a new main drain through the park.

In fine, the most convincing proof that the old sewers were never intended to be conduits for what is now understood as sewage, is to be found in the fact that up to a recent time it was, as Sir Joseph Bazalgette has said, "*penal* to discharge sewage, or other offensive matters, into the sewers;" for cesspools were then regarded as the proper receptacles for house-drainage, and sewers as the legitimate channels for carrying off the *surface-waters* only.

In a word, the so-called sewers were simply drains and not sewers, in the modern acceptation of the word, at all; and although, shortly after the commencement of the present century, householders were tacitly permitted to drain their wet refuse into the old watercourses—the *quondam* Bournes and Brookes and Wells of London—still it was not till the year 1847 (but little less than thirty years ago) that the first Act of Parliament was passed which made it *compulsory* to drain houses into the sewers themselves.

At that period, however, some such measure had grown to be almost a matter of necessity; for, owing to the increase of the metropolitan population, the subsoil had become thickly honeycombed with cesspools; while, owing to the introduction of improved domestic appliances,—such as the substitution of water-closets for the disgusting barbarisms known as privies, and the consequent increase in the wet refuse of every household,—"overflow drains" had to be constructed from the cesspools to the sewers. And so, as the sewers, or old watercourses, naturally came to be polluted by this same cesspool-overflow, it grew necessary that covered bricken channels should be substituted for the previously-existing open streams. Thus, in the march of civilisation, what was originally a somewhat capacious river, dwindled eventually into a simple watercourse, then into a mere drain or ditch for carrying off the surface-water of the neighbouring land and streets, and latterly was debased into being nothing better than an open channel for the overflow of the house-refuse from the cesspools; while, finally, it had to be converted into a *covered* or *submerged* conduit for the removal of the entire sulliage from the streets, the houses, and the factories, of the overgrown capital.

Such is the "natural history," so to speak, of sewerage: and such the simple social means by which the old English term, a *sew*, which, as we have shown, originally signified merely an instrument for the *separation* of impurities,—as a sieve for solids, and a strainer or drainer for liquids,—became, in the course of time, changed into a *sewer*, or vessel for the *reception* of all the impurities of a city; till, at length, the ancient watercourses got to be mere rivulets of refuse,—submerged streamlets of sulliage; nothing more nor less, indeed, than *ordure-ducts* for the removal of the filth of the community.

But, let us make all due acknowledgment for the removal of the said filth *now* to a point so far distant from the city itself that it must be at least less hurtful than before, even if it cannot be made useful, as it assuredly must be in the future; for "*dirt*," as Lord Palmerston said,—at once wisely and wittily,—"is but matter in the *wrong* place."

Builders' Benevolent Institution.—We are glad to learn that the late Mr. Toser, of Edwardes-square, Kensington, has bequeathed a legacy of 50*l.* to this useful institution.

* Dr. Latham, in his recent edition of Todd's Johnson derives the word *sewer* from the Norman-French *scuviere*, or *sewiere* (neither of which words, by the bye, are to be found in Cotgrave or Kelham), and this he connects with the modern French verb "*essuyer*, to wipe dry, dry up." But *essuyer* is proved by Littré in his French Dictionary to be "from the Latin *ex-succare (oter le suc, ou l'humidité) de 'ex' et 'succus' (jus)*"; the several dialectic forms of which he shows to be: Provenc.: *essugar* or *eschuear*; Spanish, *enjugar*; Portugese, *enxugar*; Italian, *asciugare*. Consequently there can be no more doubt that the root of the French *essuyer* is the Latin *succus*, juice, than there is that the root of the old English *sew*, a drain, is the Anglo-Saxon *sifa*, and the Icelandic *sia*, a sieve, strainer, or drainer. *Succus* and *sifa*, however, are two etymological radicles, which are essentially distinct; and *sewer* therefore can have about as much philological connexion with *essuyer*, to wipe dry, as it has with *sucur* (Latin *sudor*), sweat.

A MANUAL OF HOUSE-PAINTING.

IN a clever story which appeared in a leading "monthly" some time ago, an omniscient Crichton of a private secretary, advising an old schoolfellow as to the various openings in life before him, suggests,—"or you might try scene-painting; did for some time myself; pays very well; quite easy work, you know; done with a big brush, this way," moving his arm backwards and forwards in explanatory pantomime. Perhaps the same sort of description, though the most unlearned readers may perceive that it falls a little short of being an adequate definition of the art of Beverley and Grieve, would be assumed by most to be a tolerably comprehensive setting forth of the labours of those whom an able artist (Mr. Eyre Crowe) has depicted, in one of the best of his small but highly-finished works, under the title of "Brothers of the Brush," leaning in various positions from a ladder to beautify with a new coat of white a vertical strip of London street front. Yet we have here a volume of not far short of 400 pages,* devoted to the full explanation of this humbler and more practical branch of painting, and a warning in the preface against the idea that house-painting consists of manual processes only, or that a young man "has only to follow others to become a competent workman." It is true that the author includes in his treatise not only the ornamental processes (for those who so consider them) of graining and marbling, but devotes a chapter to "the principles of decorative art." This, however, is not viewed as going beyond the house-painter's proper calling; but is added in consideration of the fact that he is constantly consulted as to decorative features, such as the colouring and "picking out" of a cornice, and should, therefore, be able to give sound advice upon principles rather than upon mere imitation and following of precedent.

In regard to the more general processes of covering external and internal surfaces with paint, it is only necessary here to observe that beginners will find a very full description of the composition and mixing of the various pigments employed, and sufficient directions as to cautions to be observed even in the sort of work which may really be considered as little more than manual labour—"done with a big brush, this way." Perhaps no branch of painter's work is so extensive as that which consists in painting cement exteriors; certainly no other branch spreads over so vast an area of surface as the cemented fronts which are painted would annually amount to. It is almost painful to think of the amount of material and labour expended in what, in the eyes of the architect, *is certainly* "labour for that which satisfieth not"; though we think this field of operations is considerably narrowed, comparatively, at least, from what it used to be. There is a good and a bad way, however, even in this application of paint; and among other things the "Manual" calls the painter's attention to the unsatisfactory consequence of hurry in painting stucco before it is fairly dry, or (which is less thought of) before the walls are fairly dry. "Perhaps in general cases, where persons are building on their own estates or for themselves, two or three years are not too long to suffer the stucco to remain unpainted, though frequently in speculative works as many weeks are scarcely allowed." One could hardly expect the originators of speculative work, however, to expend upon mere painting an amount of conscience and forethought which they rarely think necessary in regard to the more vital portion of the construction.

Coming to the more "high art" branch of graining, &c., we find, with abundance of written instructions, the reminder that "the grainer who has the ambition to rise above mediocrity must bear in mind that he will not accomplish his object by merely following the written instructions here given, by copying the examples, or even by following the generally accepted pattern adopted by the mass of painters. He must think for himself, must examine and carefully study nature; and in this way he will understand the exact character of each wood, and will be able to produce good and natural representations of it." This, it will be seen, is, in fact, the same advice generally given to those who wish to excel in landscape-painting. As in that, so in graining, "go to nature"; and the grainer ambitions of excellence is advised to procure veneers cut from each of the best marked or most frequently used woods, and have them French polished or oil-rubbed, and glued on deal boards, so as to preserve them for reference and study. This is, no doubt, the way to get original and life-like effects, and there can be no denying, we think, that in graining studied and developed in this manner there is an artistic element, and that it differs from mere handiwork and mechanical labour, in the demand it makes upon the taste and perception of the painter. Whether the result is worth this trouble and study, and whether the cost of the extra labour and skill thus expended in producing an imitation of a high class of wood might not go some way, under proper management, towards obtaining the better and more beautiful material itself, is, however, a question to be considered. The woods recommended for study are bird's-eye maple, pollard oak, satin-wood, mahogany, walnut, wainscot oak, and rosewood. Coloured specimen plates of several of these are given, and (what is of more importance) the main facts as to the structure and growth of wood are given in a separate chapter. To imitate the markings of the wood accurately and with spirit, the first desideratum is to understand the way in which they are produced.

This principle is rightly laid hold of, again, in regard to marbling. The attention of the painter is called to the formation of marbles:—

"It must be observed that they are beds of rock that are veined by metallic or other substances running amongst them, and that the veins always run in the direction of the strata, precisely as thin streams of water would if poured upon an inclined plane, such as the top of a table slightly raised on one side. If this experiment is tried, it will be found that the streams, if they commence regularly, will, from some inequalities of the surface, soon alter their course and turn in various directions, sometimes joining together, forming a sort of star, and then spreading into finer threads, while others will join and form a thick vein, but still running in various forms towards the bottom. This is precisely the way in which the various substances spread themselves on the limestone, of course penetrating the surface and interspersed with the strata.

From this experiment, the painter will see *that however he may vary the direction of the veins, they must all appear to be travelling to the same point by different roads*, and nothing can be more contrary to nature than those violent and eccentric breaks which painters of veined marbles usually practise. This will apply to all marbles except black and gold, porphyry, and Florentine."

We shall probably not be wrong in suspecting that the greater part of imitation marble veining is done with little consideration of the method and principle on which the original markings come into existence, though conscientious and sometimes very successful attempts are made to catch their trick and character. The author refers to the Geological Museum in Jermyn-street as a place where fine specimens of veined marbles may be studied with advantage. A specimen of the *modus operandi* of marble-making may be interesting to those not familiar with it. In imitating one of the finest in appearance, though one of the least trustworthy and durable marbles, that known as "Black and Gold," two or three methods are suggested, of which the first and apparently the most common is, on a black ground to paint the large spots, from which the fibrous veins are to run, with yellow ochre and white, brightened with a little vermilion, dabbed with a brush full of colour and whilst quite wet, threads to be drawn from each "dab" in different directions. But a more recondite receipt—"another way," as the cookery-books say—is as follows:—

"In cabinet work, most beautiful imitations of this marble may be produced by spreading a leaf or two of gold in any part of the work where the gold, and silver leaf where the white, veins are intended to run. The black ground is then to be rather thickly painted over the whole surface, covering the gold and silver leaf; and, after the colour has been on a short time, take a round-pointed bodkin, or similar implement, and draw the colour in small reticulated veins from off the gold and silver leaf—the metal will then show in fine lines; the larger masses are to be nipped off with the wash leather spread over the finger and thumb, or a piece of wood. When the black is dry, the yellow and white veins are to be painted as before directed, and drawn over the gold and silver, which will by this means show through them, and give great brilliancy where the work has been subsequently varnished."

If imitation marbling is admitted at all as a source of decorative effect, it is no doubt better that it should be done well than ill. Nevertheless, without drawing the line too hard and fast, it must be conceded that every person whose education has led him to cultivate a pure taste in such matters, would probably prefer the plainest finish to the interior of his house to the factitious appearance of sumptuousness which can be attained by such expedients as the above, and the demand for it is certainly likely to diminish rather than increase with the progress of education on the artistic side.

That part of the painter's trade known under the general term of "sign-writing" (to which term our author with some reason objects, suggesting "letter-painting" as a more correct description of the general work included under it) has more than once been the subject of remarks in our columns, partly on its practical side, partly in regard to the "curiosities of literature" connected with it. The apparently simple business of painting a name or inscription, large size, so as to look all right in every way, in regard to proportion, size, and spacing, is a much less easy matter than those who have not tried would suppose. In treating of the execution of letters in slanting hand, Mr. Davidson rightly comments on the absurdity of making a point of the painter dispensing with mechanical aid in securing a regular slope and absolute resemblance between repetitions of the same letter, as if the painter had not as much right to (as well as need of) mechanical aids as the bricklayer or joiner to their plumb-line and rule. We cannot say that the chapter on forms of lettering, when it gets past the plainest forms, exhibits any thing very picturesque or novel; perhaps the aim was only to give the kind of letterings most in vogue; otherwise we are much in want of a little more fancy and artistic form in lettering; and it is surprising, if we come to try, what a very slight change of line or of manner will make all the difference between common-place and character in lettering. A consideration at the close of the chapter, that the character of the lettering should accord with the style of architecture of the building on which it is put up, is not always, perhaps not often thought of; and another point for which architects are to blame sometimes, is that when it is known that a building will have to carry a large inscription, no provision is made for it in the architectural design, so as to make it look like a pre-considered incident, but the painter is left to paint his big letters over the walls wherever he can, to the detriment of the total appearance of the building. We have before pointed out this in the case of one or two new erections for newspaper offices. As to the chapter on shading letters as if they were projecting, the best advice to the painter on that head would be,—"Don't." One ultra-absurdity the author does condemn, that of letters painted and shaded as if warping or twisting away from the ground, or sticking out from it, apparently, at different angles, of which he says that "while an artist may admire the drawing, the public fail to read the inscription." Mr. Davidson surely must know very well that "an artist," above all, would detest such a piece of misplaced cleverness. Painters who wish to show originality in this kind of work should seek for it in form and colour, and more particularly in form, in the designing of letters, and not in illusive tricks of shading. Of course, however, the painter is in the hands of his employer very often, and the worst offences against good taste in inscriptions are usually purposely concocted as advertisements.

The information on such perspective and geometrical problems as the painter is likely to meet with (the former are, however, in reality out of his beat) seems adequate to the occasion; but the chief value of the book lies in its condensed technical information, and in suggestions which may set a good workman thinking, and lead him to invent for himself improvements in the more ornamental branch of his business, and to develop his taste in a right direction.

* A Practical Manual of House-painting, Graining, Marbling, and Sign-writing: containing full Information of the Processes of House-painting in Oil and Distemper, the Formation of Letters and Practice of Sign-writing, the Principles of Decorative Art, a Course of Elementary Drawing for House-painters, Writers, &c.; and a Collection of useful Receipts, with nine coloured Illustrations of Woods and Marbles, and numerous Wood Engravings. By Ellis A. Davidson. Lockwood & Co., London, 1875.

CADOGAN AND HANS PLACE ESTATES.

THE proposed thoroughfare to open out these long slumbering and dull districts will confer great benefit upon the whole outlying neighbourhoods of Chelsea and Brompton; and if, as it has been reported, this line is to be continued across Yeoman's-row, towards the Cromwell-road, then, indeed, a most important duct of communication will be available for South Kensington and the adjoining districts. At the commencement of such a project, it will, however, be advisable, if not necessary, to make the roadway at least 80 ft. wide, or if it eventuate in a grand boulevard, then 100 ft. from front to front. To continue a new route at the width of Pont-street would be useless, if it be purposed to give importance to a new structural town in such close proximity to Belgravia.

Leading on to Eaton-square, to Buckingham

Palace, the Houses of Parliament, the New Opera-house, and Hyde Park Corner, it would give light and bestow a value on districts which, although vicinal, have been hitherto little frequented, and but little known.

As the object is obviously to open out an estate for building requirements, it is hard to see how a line drawn from Pont-street, in a westerly direction, can meet the object in view, without removing the old mansion and its adjuncts; but if the issue into Sloane-street were by Pavilion-place, then those might be left to intervene with Old Hans-place.

The condition of Cadogan-place garden, the marginal boundary of Belgravia on the west, has long been a reproach to the ninety aristocratic houses forming its north, east, and south boundary, or else to the Cadogan estate, if under its control. Some eighty years back it was planted and ornamentally laid out as a public garden; now it is a wilderness. In extent it is, perhaps, one of the largest railed-in areas of London; but a central portion, which was for many years let out as a nursery, with one residential villa and offices, is at present let out in three tenements—an artist's studio, a literary professor's school, and a private villa!—if the property pertains to the Cadogan Estate, this is certainly not the most profitable mode of farming it. Despite these blots and blemishes on this bushy margin of Belgravia, the opening out of the Pavilion Estate, if suitably carried out, must contribute largely to public requirements, as well as to the private interests of the proprietor.

QUONDAM.

THE WATERLOO-ROAD RAILWAY STATION.

For some time past the South-Western Company's principal terminal station in Waterloo-road has been undergoing a very extensive enlargement, the extensions applying both to the Richmond and Windsor section on the York-road, or north-west side, and also to the main line portion of the station to the south-east, in the direction of Lower Marsh and the New Cut. Works of great magnitude, involving a large outlay in the purchase of property, are about to be commenced on the last-named side of the station for the purpose of adding to the station area for the main line traffic, which, when the works are completed, will be almost double its present size. The owners and occupiers of a large number of houses and other buildings immediately adjoining the extreme south-east entrance to the station have for some time been under notice, and in a few weeks their several tenancies will expire, when the buildings will be demolished, and the site upon which they stand will be thrown into the station area. Upon a considerable portion of the space so added new lines will be laid down, with the construction of a corresponding number of new platforms, in addition to which there will be several new sidings, the whole of this added station accommodation being required in consequence of the constant increase of traffic. The extension also provides for a new carriage approach to the station on the south side from the direction of Westminster Bridge-road. The space thus added to the station will be covered in by a light ornamental roof. New station buildings are likewise in course of erection at the east boundary of the existing main line portion of the station. Over that part of the colonnade running alongside the platform, and also at the south-east angle, new ranges of offices, carried up two stories in height above the existing buildings, for the general purposes of the company, are in a forward state. The extensions and new approach to the Richmond and Windsor section of the station, in York-road, have been completed and opened within the last few weeks. This portion of the enlargement has also necessitated a large expenditure, upwards of one hundred houses and a considerable area of land having been purchased in order to carry out the works. The new approach from York-road is by an inclined plane, and has two roadways, the one giving access to the station, and the other egress from it. The approaches in York-road are inclosed by ornamental iron gates and railings.

The Westminster Aquarium.—H.R.H. the Duchess of Edinburgh has consented to open the Royal Aquarium and Winter Garden at Westminster on Saturday, January 8th.

DOVER AND MODERN TOWN BUILDING.

What tales could Dover cliffs, even before the days of Hengist, unfold, says the guide-book, if the stones of them could but cry out! What, indeed, and not in one tone only, but in many, for Dover cliffs have witnessed not a few changes sufficiently momentous. The cliffs truly remain pretty much as they were thousands of years ago, but how much all things human have changed since men first saw those white Dover cliffs. Indeed, might they not tell the whole history of man, and a great deal more? Many lessons, architecturesque and picturesque, may, we think, be gleaned from a contemplation of these cliffs, and what they bear up, and some hints may suggest themselves as to how best to "improve" them, or at least part of them; for, as it seems, man's ingenuity and desire to do a something cannot leave them quite alone.

Sea-side towns are always of special interest, for we may,—especially when there are cliffs with rents in them,—read in them their history more or less clearly. Time was when no town or vestige of human habitation existed on them, and when nature had supreme sway, the sea and cliffs doing battle with each other perpetually. This was a long time ago indeed, but it still goes on in out-of-the way spots where the ground bids defiance to all attempts at cultivation or improvement; and there it is seen, and there alone, what nature really can do. It is the very mightiest of all sights; and the eye is never tired of gazing again and again at it. Some little time and patience, may be, is needed to see it clearly, but once seen it is never forgotten; and what is more, never to be mistaken for artificial or cultivated work. There would seem to be no possibility of either cultivating or improving the perpendicular wall of a sea-cliff; all that can be done is to shore it up, sometimes in ways not a little awkward and inartistic; but in the time we are now referring to, before man made his appearance on the scene, all was the work of nature and the natural forces. No choosing a "point of sight" from whence to get glimpse of an artistic picture was needed. This was the first phase in the history of Dover, and it seems a pity that so potent a genius as Turner, who tried his hand at Dover more than once, did not go to work, and with or without imaginative power,—and which would it be?—limn Dover with its sky, sea, and cliffs, as they were *minus* the human additions. Turner has not done this,—it does not seem ever to have occurred to him; but he has almost of necessity hidden a good deal of the modern formal and utterly inartistic "marine parade" and hotel architecture by masses of vapour and sea mists. The ever-restless sea, the sky, and cliffs are as ever the same. This was epoch the first in the history of Dover, the Continental gate, as we are told, of the kingdom. What was the next epoch in its history?

The next phase in its history, looking at it artistically and architecturally, and pictorially,—and this will be found to be a not a little remarkable phase of it,—was in that time when it seemed possible, which it certainly is not now, to cover large or small plots of ground with buildings without injury to the pictorial landscape. Leaving for the present the earlier and savage hut-building, always, by the way, picturesque, and sometimes more than that, what can possibly be more pictorial, and how better or more effectively placed, than the old Norman Castle on the summit of the northern cliff! What tales, indeed, as the guide-book says, could Dover Cliffs tell! Very many, indeed, and this not the least: that the rude untutored men who first built solidly on the tops of Dover Cliffs knew well how to do their work, and to take advantage of the nature of the ground on which they built. You may go many times round and about this Norman castle, and it will be hard to say how it could be in anywise improved, so thoroughly well studied has the ground been. The towers one and all rise from it almost naturally, as trees when growing wild rise out of the earth, and the very ground itself is made to regulate the rise and fall and sky outline of the building, or rather series of buildings. Turner never found difficulty with this fine old castle building; that always appeared, even through the "mist" of his pictures,—adding to the interest and marvel of them! How was it that the rude Norman men of so distant and unenlightened a past should do instinctively what would seem to be utterly beyond modern power to accomplish,—except in a picture? How much there is yet to be thought about and done in the architectural education department of things. If any doubt it, let them go to Dover. It is not "music" only that is there wanting.

We could dwell for a long time on this building of a past, almost forgotten age, so full of remembrances of all kinds, and can but regret that it is in the state it is. Like some others, unfortunately, as the Tower of London, it is full to the brim of military stores, and what is really nothing else but lumber, so that it is all but impossible to see it. A glimpse here and there is all. Military storehouses are of course, in places like Dover, absolute necessities, but why fill such a building with these "stores," when one properly constructed for the purpose, of plain brickwork, would do so much better? Such a building should certainly be left empty, and suffered to exist as a memorial and remembrance of a past age, and state of things utterly out of date. To attempt to "utilise" this Norman castle would be as hopeless as to attempt to go back to cross-bows and battering-rams. May we urge upon the authorities to clear out this venerable and antique ruin, and put the stores into some of the multitude of barrack buildings round and about it, some of them apparently quite empty? We would fain go the round of this castle, and try to look at it as it once was, but the "modernisings" in it have rendered this all but an impossibility. Some parts of it are quite new, mere contractors' work, without "mason's mark," for all has been levelled and smoothed down into a dull uniformity, outside as well as inside; so that at times it looks not a little like a modern castle building fancy, like Windsor Castle. All romance goes when this is ever in sight, and the very spirits of the dead Past flee away creaking from the bran new battlements! Totally neglect it, leave it to rack and ruin, and the weird spirits abide in and about it; but invade it with railway modernisings, and more is done to destroy it from foundation to tower top than all the sieges it has ever yet gone through. More's the pity of it! Can nothing be done? Then, again, there is the not-to-be-omitted Castle Church of St. Mary, the most ancient church in the kingdom, as the guide-book says; but no one could well think it, for it looks almost new, so neat and cleanly does it show itself, contrasting not a little strangely with the really antique-looking "Pharos" close to it. No restoration fortunately has here been attempted, it is a ruin yet. Doubtless it was in its day a lighthouse or beacon indicating the position of the castle to those out at sea. Tradition says it was, once on a time, some 120 ft. high, with flaming beacon-fire at the summit,—a striking object at sea, and fairly visible from its very size, and, it is certain, cheering and home-inspiriting to the storm-tossed mariner. There is nothing like a light-house light at sea. This Pharos is instructive, and not a little suggestive, as it shows how the old builders were up to their work, and could contrive simply useful structures as well as castles and churches, and could at the same time compel them all to harmonise. It is now, says the guide-book, "put to the ignoble use of a coal-house," so that it does not fare better than the adjoining castle. Thus may we get, as through a glass darkly, a glimpse of the Dover cliffs in the darkness of the Middle Ages, and in times of the fierce Normans. We may even people such a place with its old inhabitants, with its knights, and fair ladies, its soldiers, and hangers-on; and some curious thoughts arise as to such a state of things mundane. What was the genuine Saxon, the real Englishman, doing all this time, and what had he to do with this Norman castle and stronghold? And the still more ancient Briton, had he disappeared altogether, or was he to be seen every now and then as a wild outcast, startling even the fierce Norman himself? Nature, sea, sky, and cliffs, were there the same, whoever was master.

Thus was, in its day, Dover Castle, and right well must it have harmonised with the ground on which it was built, and with the surrounding country. The old Norman town, by the way, at its base must have been a quaint place to go through; and some vestiges even of this may yet be made out by the help of buildings here and there, and by the turns and directions of the narrower streets, and, may be, even in the odd names of some of them. It is, of course, only in the older parts of the town, and in spots where the force of modern improvement has not completely ploughed up everything, that this is to be in any way got at. It is fast disappearing, but is surely worth a word of record before we come to the new and quite modern town. A

good part of this new town is of to-day, and still going on. Before we quite leave the older town it may be well to note the existence of the "old churches," though they do not *look* old; for where so much repairing and mending and brightening up of the old stonework is done, all sign of age and antiquity well nigh disappears. There is St. Martin's-le-Grand, where the "time" was struck on a bell, for the other churches to go by. The site of St. Peter's Church is now covered by an hotel. The really interesting church of St. Mary the Virgin, with its long nave, with simple Norman columns and round archways, looks almost like quite new work, so thoroughly has it been cleaned and brushed up. It is a right goodly church this, and almost as impressive as a cathedral. Restoration! Would it were possible to "restore," in the real sense of the word, this identical church, *i. e.*, to make it look again as it was after its centuries of existence, time all the while adding nought but colour? How solid it looks, compared with the new work so close at hand. The old Norman men, it is quite certain, knew well how to build. We come to the new town at last, and plenty there is of it. The good people of Dover must have come up to our mighty London for the idea of a quite new, and quite straight, and quite uniform, and utterly without interest of any kind, sort of street, *i. e.*, rows of houses and a passage between them. You find yourself in suburban London again, without the trouble of the railway journey. One can only wonder at the modern fact of such as these little flimsy, smart pill-boxes of houses pushing the old town, and in time the very Castle itself, into the restless sea!

"ON THINGS IN GENERAL."*

IN May, 1867, I had the honour of delivering my last lecture to the Architectural Association. At the end of eight years I feel there is the same necessity of saying very nearly the same things as I said at that time. In fact, the situation is but very little changed. As I am to talk of things in general, it may perhaps be as well to make a division of the subject under three great heads:—(1.) The present State of our Art; (2.) The State of the Institute of Architects; (3.) Our Prospects of future Progress in Architectural Education.

I. *The present State of our Art.*—In 1867 I ventured to state the last development of domestic Gothic architecture as follows:—After noticing the prevalence of notchings, chamfers, and straight-sided arches, I remarked that "the last invention is to use large sash-windows, with the maximum of glass and the minimum of wood; then to put in a flat stone lintel, and over that a pointed arch, filled in with brickwork. Now a window-opening demands cutting up, if the scale of the building is to be preserved, and, as far as I am able to judge, nothing is more destructive to the general effect of our modern buildings than these enormous sheets of plate-glass in the windows." Since the above observations were made we have been blest with what is called the "Queen Anne" style. The receipt for this invention is simply to take an ordinary red-brick house, and to put as many gables, dormers, and bow-windows as possible; in fact, to cut up the outlines: the great object being to get the picturesque by any and every means. The windows should be long and narrow, and filled with lead glazing, or with small frames divided by straight bars painted white. One professor of the style (if not the inventor) used to put in some twelfth-century feature, such as a very severe pointed arch, like those found in the South of France. This may have been done for conscience' sake, but it is only fair to observe that the other professors, who are, for the most part, deserters from the Gothic camp, keep very clear of any such eccentricity. The ornamental parts consist of a few scrolls in the brickwork, and coarse woodwork, occasionally verging on the Jacobean, dull green and white being used for the interior painting. It cannot be denied that there are sundry advantages connected with this arrangement, which fully account for so many good men throwing over their own style and adopting it. In the first place, there is the picturesque outline, which, by the way, has but little to do with the real "Queen Anne" style. In the second place, the small panes of glass and the thick bars supply in some part the use of tracery, and give scale to the building. In the third place, it saves a very great deal of trouble,—the mouldings, such as they are, are those in common use; and above all, the style, if so it can be called, is fashionable. It has been said, with great truth, that the real restorer of Mediæval art was Sir Walter Scott, who made it popular by means of his writings. In the same way, Thackeray, by means of his writings, has made Queen Anne's style popular; whether it will continue so is quite another question. The Mediæval architecture was a perfect system; it had its own development, and was surrounded by all the subsidiary arts. On the contrary, in Queen Anne's time we were at the very dregs of the *Renaissance*; our domestic architecture was imported from Holland, and our ecclesiastical from France. There is a well-known letter of no less a person than Sir C. Wren, in which he describes himself being at Paris and going about the print-shops to pick up grotesques with a view to the ornamentation of St. Paul's. I have carefully looked over the plates in the architectural journals, and I find, as far as regards those buildings in which a certain amount of money is available, very good and fair architecture; in fact, there is a decided improvement upon what was to be seen eight years ago. It is true that, occasionally, the architect appears to be under the influence of what is called "the picturesque," and we find designs for houses which are to be built in various materials, where strict logic would demand that a single one should be carried through the building; and even, occasionally, different epochs mixed together so as to give the idea of the edifice being built at various dates; still, it must be confessed that for the most part they are artistically combined, the bad designs being in a very considerable minority. It should be observed that these illustrations demonstrate the sort of work that is going on all about, both in London and the provinces, and are not merely the works of our most eminent architects; for since the invention of photolithography, a drawing which is fairly etched, and which can be copied right off, has a far better chance of being published than the best water-colour, which entails the necessity, and consequently the expense, of being in the first instance translated into black and white. Thus much for buildings where some little money is available. But what is to be done where less money is available? I have told you how the problem was endeavoured to be solved eight years back, and I have also told you how certain architects solve it in the present day; but the question is, are we absolutely obliged to solve it in this manner? It is impossible to go on building dwelling-houses in the "Queen Anne" style, and parsonages and town-halls, and the domestic buildings of the better class, in the Gothic style. One must swallow up the other; and what would happen if the former were the victor, and we went back for our domestic art to that period? At present the practitioners of it are well-learned men, for they are nearly all deserters from the Gothic school. But fancy a man brought up in the "Queen Anne" style! What would he have to fall back upon, having been taught no art but that? I, for one, would be very unwilling to give up the Gothic school, not only because I have been brought up in it, but because I think it has more capabilities for our climate than any other. If all the Gothic buildings which have been erected within these last thirty years could be collected together in one or two cities, what glorious cities they would make! It is simply because they are dispersed in a wilderness of modern builders' houses that they get lost and forgotten. As I have before remarked, I have no fear whatever as regards the erection of such buildings as town-halls, parsonages, hospitals, and anything upon which some money can be spent. The question to be resolved regards such buildings as those where the money available allows very little more to be done than in the ordinary builder's edifice. It is evident that the picturesque outline of the "Queen Anne" school is available to all styles. The real difference is between the sashes and mullions. If we use the latter, we require, in the first place, stone, and in the second, casements; sashes and mullions do not go very well together, though sometimes used. If narrow windows are adopted, it is surely better to be content with tolerably-stout bars dividing the panes of glass than to use one large piece. Besides, it does not always follow that the panes should be square; on the contrary, they may be made in any pattern. The next things are the mouldings and details; and I would here suggest whether these could not as well be Gothic as those of commerce, and whether the scrolls (such as they are) might not be left out with advantage? If large sheets of glass be wanted, why not let them be confined to the bottom of the window, through which there are things to be seen, and not employed at the top, where we do not want the full glare of the light over our eyes? We should, morever, never forget the difference between town and country buildings, as is too often the case. A town building should have a certain amount of composition in its façade, and, as a general rule, be built of stone or brick, with wood sparingly applied,—not to make the walls of stone and the gables of wood, when the great object in town houses is protection from fire. We have also still to solve the problem of making imperishable façades to our town houses, with materials impervious to smoke and atmosphere, and to apply our granite, majolica, and mosaic in the proper manner. (Those I see are generally applied in a very improper manner.) I hope in another eight years more progress may have been made both in this problem and in that of applying good art to the ordinary brick house. As to the "Queen Anne" fashion, like other fashions, it will have its day. I do not call it "Queen Anne" art, for, unfortunately, I see no art in it at all.

II. *The Institute.*—I now come to my second topic, viz., that of the Institute. I can well remember in my younger days how the Institute was considered as a sort of Sleepy Hollow, especially in the possession of the followers of what was termed "Classic" architecture. So much was this the case that it was seriously debated, at a meeting of the Mediævalists, whether they should form a new society or join the old one; but inasmuch as the old society was well established, and had charter, funds, and an organisation, it was finally determined, and I think very wisely, to join it. I can only say that we were exceedingly well received, and in due time had our fair share of the government, *i.e.*, we were put on the Council and committees. Between that time and the present many good results have followed. Thus there has been a scale of fees, which, unfortunately, has been often misunderstood. It simply proclaims that the ordinary scale is five per cent., but there is nothing, I conceive, to prevent the architect making his own bargain with the client for more or less before the work begins (I have heard the Institute called a "trade-union," because it insists on five per cent., but it does not). I presume the five per cent. applies in case nothing is said before hand either on the architect's or client's part. Some years ago, before the division of labour began to obtain in the profession, an architect was supposed to be everything and do everything; thus one day he might do a warehouse, where the same bay was repeated several times, and the next day he might have to design a church. The good pay of the warehouse was supposed to reimburse him for the bad pay of the church. Now that we have one class of men who design warehouses, and another who do churches, it is evident that the same rule should not apply to both. Another production of the Institute is the "Agreement." This, among architects and their lawyers, is generally considered as a little too favourable to the builders, but I believe it works very fairly, and, above all, contains the clause about written extras. The library has been considerably enlarged, but would well bear further extension. There is also the Architectural Examination, which would undoubtedly be very useful were it a question of granting a diploma, but as it leads to nothing it is not particularly useful, except to enable gentlemen to test the amount of knowledge they may have acquired in a certain time. Of late, I understand sundry propositions, more or less unofficial, have been made to induce the Association to join the Institute. I confess, for my part, I hardly see the expediency of it. With or without determining whether the Institute is, as some of its members affirm, a non-educational body, there can be no doubt but that the Association is most decidedly an educational body. No pupil can expect to get on in his profession who does not work beyond his office duties, and the Association is exactly the institution which helps him to do so. Hitherto, you have been quite equal to the management of your own affairs, and I should venture to recommend you to continue in the same path. I decidedly think that, like the Legislature, the profession should have its two houses, where the lower should be a preparation for the upper. But if it be not desirable for the Association to join the Institute,

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* By Mr. W. Burges. Paper read before the Architectural Association on Friday evening, December 17.

on the other hand there can be but little doubt of the usefulness of being affiliated to it. There are many advantages in this course. By negotiating, your members could have access to the library during the evenings. Now, the Institute Library is a very good one indeed, and contains many books which could only come within the students' reach at the British Museum or at South Kensington; the former is shut up after dark,—the only time the majority of the Association could use it,—and the latter is at a somewhat inconvenient distance, besides, it is also a loan library, and it sometimes happens that the particular book you may want is on its travels among the art-schools of the provinces. On the other hand, the books of the Institute are always there, and are never taken away. As regards a loan library, you have a very fair one of your own, which will doubtless augment every day. Another advantage the Institute offers is the Soane Medallion, also the Pugin Studentship. It is almost impossible to overrate the value of these, as well as of the travelling studentship of the Academy. All architects should travel, but more especially the art-architect; to him it is absolutely necessary to see how various art problems have been resolved in different ages by different men. Fortune has perhaps not been kind to him; he may have, in a pecuniary sense, no father. The Institute and the Academy place these advantages within his reach, if he has the talent and can work. Were the Association affiliated to the Institute, its council or a committee might ask official questions and receive official answers as to the meaning of the conditions of these prizes, and thus the very unlucky and painful discussion which took place on the subject of last year's silver medal would be avoided. My own opinion upon the matter is that the instructions were clear, and were fairly worked out by Mr. A. Hill. Still, some students had doubts, and if, instead of writing themselves to the Institute they could have got the Association to write, I fancy all would have gone well. I do not speak of sundry presents of books which are occasionally offered as prizes, nor of the various medals, for a more useless thing than a medal it is impossible to conceive, from the great gold medal of the Institute downwards. As a general rule, you cannot wear it (the medallists of the Institute do); you cannot in honour sell it, and if you could, it would not fetch much, except it was of gold; and nobody would for a moment think of retaining it as a work of art, for our modern medals, as well as our coins, are very far from having a claim to that distinction. On the other hand, the affiliation of the Association, as well as of the country societies, would, doubtless, strengthen the Institute, and it should be considered the right thing for a man, after being a certain number of years in the Association, to go to the Institute and form new blood in the upper house. There he will have every chance of being put upon the Council, and if he has good fortune and polite address, and treads on nobody's toes, he may become vice-president, and even obtain the highest honour in the profession, *i. e.* that of president. I wish I could promise him the Academy; but there the chances are against him. There are too many and too few architects in that body, and there is no receipt for obtaining the honour. If the Academy chose from two or more gentlemen selected in the first instance by the Institute, an Associateship might possibly be held forth as attainable by talent and so forth; but as the painters are in a very large majority, and naturally are not very well up in the merits of the members of another profession, it is difficult to give any receipt as to attaining the distinction. My own view, therefore, would be to strengthen the Institute in every manner. If possible, I would have all the other architectural societies and exhibitions collected under the same roof. Thus I would have the Architectural Museum; also a more or less permanent exhibition of working architectural drawings (the pretty perspectives going as usual to Burlington House); also an exhibition of ordinary building materials, another of models, and a third of new inventions; in fact, there should always be some exhibition,—free if possible,—on hand. The lower parts of the building should be converted into shops for trades connected with the profession, *i.e.*, for the sale of books, bronzes, goldsmiths' work, &c.; and I would even have the Arts Club,—the real Junior Athenæum,—in an adjoining house. This is, I am afraid, but a dream, and yet one not altogether impossible to realise. But there are other things which the Institute is perfectly able to do without incurring any such expense as the foregoing scheme demands. Such would be a standing judicial committee, which might be paid by the litigants, and which would, in most cases, avoid law-suits. We also want many points of professional etiquette firmly established and put into print, such as the rule of calling upon another architect who has been employed previously by the same client, and ascertaining that he has closed his relations with the said client; also, whether it is "professional" to ask for work; and other points of the sort, which are generally understood, and not written.

III. *Prospect of Future Progress.*—My third point is the prospect of future progress. Now this progress refers both to the client and to the architect. As regards the client, why is it generally believed that the French or Italian client is a better judge of art than an English client? It is not because the latter is not so well learned in general matters as the former; on the contrary, much more care has, in nine cases out of ten, been taken with him. It is simply because the foreigner, being in the habit of seeing beautiful things around him in the streets, museums, and churches, has a better chance of educating his eye than the Englishman, who sees few works of art in his daily walks. All honour, therefore, to the late Mr. Slade, whose object, in founding the professorships at Oxford and Cambridge, was to get hold of the client in his youth, when, if ever, he is likely to receive impressions. These professorships are but as a brick out of a house; to effect his purpose there are wanted at each university not one professor, but twenty. A man ought to be allowed to take his degree in the arts as he does in law or medicine. As it is, the client hears a few eloquent discourses from the learned professor, and probably enters into public life with reminiscences of Turner and sundry ancient and modern painters as his only art-knowledge. Sir Digby Wyatt tried to teach the other arts, but how could he do it in a few lectures? Our client begins public life, and while in London lives in a house in one of the great roads in South Kensington, and which is exactly like his neighbour's. Perhaps he buys a few modern pictures to hang round the walls, or perhaps he tries to buy old ones and gets taken in. His country-house is an old or new Elizabethan edifice at the best, with very white plaster ceilings, and very black oak panelling; the only colouring he has the chance of seeing is when he goes occasionally to the theatre. The church he attends is equally without colour, except some glaring stained-glass windows, which had better be broken up. At the same time he probably reads the standard books on art, but they only give him some crude information which soon evaporates, because he sees nothing around him to keep it up. The best thing for him is to go in for archæology; but even in that branch there is a lamentable deficiency in all classes of life. A short time ago there was a wonderful paragraph which went the round of all the papers, including the architectural ones, about a sword found in digging the foundations of the New Opera-house. According to the gentleman who supplied the first information, the handle was of gold, and the date of the fourteenth century, while the blade was of "the true Spanish temper." How the writer found out this latter peculiarity he did not stop to inform us, but we were told that the original was in the office of the architect, Mr. Fowler. Now all, or nearly all, the newspaper offices are within ten minutes' walk of Mr. Fowler's office, but none took the trouble to look for themselves, although the golden handle of a fourteenth-century sword could not fail to be a most wonderful and curious thing. When we consider the comparative rarity of gold at that time, and how accustomed our ancestors were to make precious materials still more precious by means of workmanship, we might expect to see something like King Arthur's sword, as described by Tennyson, or the wonderful sword in the Treasury at Cologne Cathedral. It turned out, however, to be a lansquenet's weapon, such as must have been manufactured by hundreds, and such as are to be seen in any number in the prints of Albert Dürer, Hans Burgmaier, and other artists of the beginning of the sixteenth century. I mention this one fact to show that archæological ignorance is not confined to one class alone. I now come to the art architect. I have already stated that he cannot expect to learn his art simply during his articles of pupilage; it is absolutely necessary that he should educate himself and travel. As to his education, it is never finished. I do not speak simply of his art-education, such as learning the figure, but his book-education. If he wants to obtain judgment and taste, the figure and reading are almost the only means to that end. I do not mean to say that they will give brains to a man who has none, but they will enable the grain of mustard-seed to become a tree. The reading should consist of the greatest and best historical and imaginative authors, and every piece of knowledge should be acquired with regard to its bearing on his art. Another plea for reading is that he must be able to converse with his client, who is almost always up in this part of his education, and also in his travels. With regard to the students' travelling, I should recommend staying long in one place, and mastering thoroughly one or two things; anybody with money can rush from town to town. Before going to work it is always advisable to give some considerable time in contemplating the object to be studied,—to ask one's self why was this done, and wherefore was that left undone. Sketching is of course useful, but the art-architect must learn his profession at the foot of the ladder, and take his time about what he does. Now with every respect to my friend Mr. Sharpe, for whom, I need not tell you, I have the very greatest regard, I do not see how the last two journeys,—I was about to call them scrambles,—could have benefited those who joined them. I read that there was an introductory lecture, very good indeed (like all Mr. Sharpe's lectures), and then every one was told off to measure a certain portion of a church or cathedral; whereas, to have done justice to the lecture, what was wanted was to have spent the day looking carefully round the buildings, making notes and observations on the previous lecture. If the student can possibly afford it, he should by all means go to Athens, and see Greek art *in situ*, for a knowledge of Greek art will be his sheet-anchor during his artistic life. He will be saved many an error in composition if he only asks himself, "What would a Greek have said to this?" I have one word to say about drawing. Doubtless it is a good thing to draw well, but do not imagine for an instant that fine drawing will ever supply the want of thought. Drawing, after all, is only a sort of writing; and in a letter it is not a question of how you write, but what you write. If you draw without thinking you will be obliged to rub out, and, somehow or other, a thing that has been much acquainted with the india-rubber seldom looks as well as one that has been put in at once after having been carefully considered. As far as I can judge, I venture to think that we are really progressing in art. Thanks again to Mr. Slade, a good figure-class is established in London, and it is your own fault if you do not make good use of it. It is to be hoped that under Mr. Poynter's management, the Dyce outlines, and the system which employed them at the beginning of the course of study, will be abolished, for no book ever deterred so many people from learning to draw as this one. South Kensington is also making itself felt, for designers for the various trades, such as carvers, &c., can actually be got who can draw ornament very fairly. I do not believe that an average Englishman is more deficient in capacity than the average native of other countries of Europe; the latter, as I said before, has the inestimable advantage of having beautiful things around him; the obvious thing for us to do is to create beautiful things. You all have the power to do this,—not to a large extent, for that requires money; but if you cannot have many objects, you can have one or two or three, which you can create yourselves. Thus you can paint the walls of your studios, or illustrate your Tennyson. It all depends on yourselves, and the better you do these same things for yourselves, the better you are likely to work for your clients.*

The Hastings Town-hall Site.—The *Hastings and St. Leonards News*, which reports a long debate in the Town Council on the merits of the rival sites for the proposed new Town-hall, says:—"The Battle of the Sites is only just begun in the Council. The Town-hall question is put off for a month; and, after another engagement, will probably be put off again. Meantime, some notice should be taken of the builders who have tendered for the hall on the Station-road site."

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* A discussion followed, report of which we will give in our next.

PARIS HOUSES.*

IF it be true that the flat system of residence has political, moral, and domestic drawbacks of a marked character which the French themselves have long pointed out, it is right that these should be known and discussed in order that London architects may be enabled to avert or at least modify similar disadvantages in the different projects for houses-in-flats, to which the English metropolis is gradually getting familiarised. M. Violliet-le-Duc argues, with his habitual force, that the sentiment amongst men of personal responsibility and individual distinction, which has diminished in France since the sixteenth century, has been preserved to a great extent in England. This, he says, is due to the fact that families in this country are not swallowed up in a huge depôt of a building as in Paris,—that although the exteriors of London houses present a uniformity of ugliness, the interiors are singularly varied, and reflect the diverse characters of their occupants. He says, the walls of a man's own house, within which his children grow up, have ears and eyes, and a tongue, and the owner would be ashamed to do within them much that perhaps might be tolerated in a lodging, which he could quit in six months. Nevertheless, the modern tendency to ignore the individual and level distinction in society is perhaps more conspicuous in aristocratic England than in democratic France. The only difference here between the nobleman and the bagman, who descend by the same omnibus at the same hotel, is that the former is No. 20 and the latter No. 200,—in the hall-porter's memory and the visitors' books. Amongst middle-class families in France, the formality of precedence is often maintained with tiresome precision. It is quite an erroneous impression which is current even amongst travelled Englishmen, regarding the mixed and heterogeneous character of the inhabitants of a Paris house. It is popularly supposed that in Paris a marquis inhabits the first floor, a count or viscount the second, a plain Monsieur (decorated of course with a red rosette) the third; while tradesmen and their families, bachelors of all grades, and even simple working men and women divide between them the upper floors of a house-in-flats. It is argued that English people would never consent to such a system. Neither, with all their democratic foibles, do the Parisians. As a rule, Paris houses are inhabited by families of equal or nearly equal position in society, or, at least, they are so arranged by means of separate staircases that the meaner tenants do not encounter their happier co-inhabitants except in the open courtyard, or at the carriage-entrance. But that a number of families living under the same roof, though in self-contained residences, renders evil communication comparatively easy, even if it do not induce to it, is indisputable. No better or truer description of "life" in Paris towards the end of the Second Empire can be found than in M. Sardou's play of the "Maison Neuve." Unlike, however, the characters in that celebrated comedy, families occupying the same house generally contrive with French tact to bow, but not to know each other. With the servants the case is different; and the acknowledged immorality amongst the Parisian servants is certainly encouraged by the manner in which they are lodged. Indeed, considering the high-flown sentiments which are promulgated in France about the equal rights of flesh and blood, the domestic servants of Paris put up tamely with much against which their English brethren would revolt. M. Jules Simon, writing years ago, said: "All the servants of a house, femmes-de-chambre, nursemaids, female cooks, valets, and coachmen inhabit under the roofs. . . . . In truth, this story is inhuman. . . . . But is it only inhuman? Who overlooks these limboes, inaccessible by their elevation, their temperature, their dirtiness? . . . . Therein is permanently established the school of theft and lust. God preserve every young girl from serving in a virtuous house which can lodge her only there!" Since these words were written, some improvements have been made in servants' rooms, and the sanitary arrangements throughout a house have been improved, but the moral taint still pervades, and must continue to pervade the upper story of the Parisian mansarde.

The *concierge* or porter is also a sinister feature of the Parisian system of residence; but it is due in a great measure to the use which is too frequently made of him. Successive governments have enrolled the worst of these functionaries in the ranks of the secret police; but the fees they receive to lie or be silent come quite as often from the tenants as from outsiders. The Parisian porter is the recipient of all the letters delivered by the postman. He is the servant of the landlord, not of the tenants, and he generally collects the rent of each residence. His position makes him an idler, at least in the best houses; although in the business localities he is often a petty tradesman, and mends boots or clothes. He must be married, for there must be always some one in the lodge, and the wife answers whether the tenants be out or at home, while her husband is dusting the stairs, cleaning the courtyard, or delivering letters and parcels on the different floors. There is, however, no reason why, in a house-in-flats, a *concierge* properly trained and treated, should not be as useful and respectful to the different residents as a porter is to the members of a London club. But that it is not so in Paris, and that the *concierge* is a social evil and a domestic nuisance of increasing magnitude, no inhabitant of the French capital, of any shade of politics, will deny.

Whether the economical habits of the French middle classes are due to the manner in which the majority have been lodged since the days of Louis XIV., it is difficult to say. There is, however, authority for the assertion that habitual sacrifice at the shrine of Malthus, which distinguishes the French people, is now so far traditional as to have deprived, at the present day, many women of the power to bring forth children; but that this is the result of dwelling in flats is hardly probable, seeing that the owners of private houses have not been more prolific than those who have only occupied a part of one. It is easier to understand that the small space devoted in a Parisian residence to the kitchen has led to the retail purchase of domestic provisions; whereas the Londoner buys them, comparatively speaking, wholesale. The domestic offices of a Parisian flat are as necessarily confined as those of a London house are extravagantly extensive. The pecuniary waste of the latter is enormous, compared with that of the former. In a London house of any importance there are often two kitchens, a scullery, two pantries, and a larder, besides a number of smaller offices and cellars; but a Parisian flat seldom embraces more than a small kitchen, which is used for washing as well as cooking, with perhaps a small pantry or store-room; while in the basement there are two cellars, and in the roof two bedrooms for the use of the tenants' servants, which are let with each residence. The Parisian generally has a comparatively large store of native wine in one cellar and wood and coal in the other; but his daily food is purchased by his cook from hand to mouth. She often makes two descents a day to buy what is necessary for each meal. From time immemorial the Parisian appears to have been satisfied with two meals a day, which simplifies the service of a household,—a breakfast of coffee and bread and butter not being considered a meal, as it is brought into the bed-room at an early hour in the morning, for Paris is essentially an early riser. The origin of what in courtly English phrase is called the "levee" is still unconsciously practised even among the middle-class Parisians. Once people pressed in the antechambers of Versailles and Whitehall when Louis the Great and Charles II. were having their corns cut or their wigs arranged; and just after the sovereign was out of his bed was deemed a convenient moment to ask a favour or communicate bad news. The habit of receiving, as they lay in bed, visitors of both sexes was practised by French ladies even after the death of Louis XIV.; and at the present moment a Parisian lady of the highest propriety will receive a visit from a gentleman in her own or her husband's bedroom. Such rooms, being more used, are consequently better furnished than in England, and the sleeping apartments of the English middle classes are by no means arranged with the same comforts,—not to speak of luxuries,—as those of Parisians in the same state of life. For the latter may argue that to use a room only at night is opposed to the economical principle which dictated the flat system of residence.

It is quite as amusing to read the complaints made by Englishmen against the Parisian mode of habitation, as to hear the stories told by Frenchmen of London houses. Dr. Johnson, writing on October 16, 1775, said, "The French have a clear air and a fruitful soil, but their mode of common life is gross and incommodious and disgusting." More than sixty years before, Addison, in a letter to the *Guardian* written from France, had said, "The people are the happiest in the world, and enjoy from the benefit of their climate and natural constitution such a perpetual gladness of heart and easiness of temper as even liberty and plenty cannot bestow on those of other nations." Now the ordinary Englishman is born a grumbler, and to govern him well he must be encouraged to grumble. If the Londoner were ever compelled to adopt the Parisian system of living he would have to eschew for good many of the fancied privileges he possesses,—more particularly the rooted fallacy that his house is his castle,—and so become a more agreeable neighbour than he is often said to be at present. As population increases, and metropolitan land rises in value, the suburban semi-detached boxes and strings of terraces which are inhabited by families, who, if they lived in London, would be obliged to occupy lodgings, will perhaps be swept away to make room for larger and more remunerative houses. It is, therefore, not premature to consider whether there be anything in the national temporament which leads Englishmen to prefer living in a vertical slice out of a row of small houses rather than in a horizontal slice out of one large house.* There is a great deal to be said against the system of inclosing several families within the same walls and under the same roof,—a great deal to be said against the dangers of a public staircase. As a contributor to the last number of the *Quarterly Review* has urged, it is, of course, most desirable that "only one family should be lodged in each house." Nay more, to cap the Reviewer, every rood of land is said once to have maintained its man. But, putting aside sentimental reflections, it is just as well to be reminded that a large number of the inhabitants of London proper are lodgers. All these lodgers—groups of people and families—now live in houses each expressly constructed for the accommodation of a single family. To put some of these lodgers into flats containing domestic appliances exclusively contrived for separate groups, instead of allowing them to extemporise kitchens, larders, and privies in the way they now do, would surely jeopardise no time-honoured customs. On the contrary, it would ratify the existence of an educated lodger population, which the Legislature has already recognised. Economy of space is one of the problems which Londoners at no remote period will have to grasp. No doubt, one day Brighton will be joined to the metropolis by rows of villas lining the high road; and then, perhaps, the comparative emptiness of London proper will be thought worthy the consideration of practical economists.

The flat system of residence as practised in Paris is, however, unfitted for the actual ordinary lodger population of the English metropolis. But in this country more than in others there is a class of poor gentlemen and ladies who make few complaints, and of whom very little is heard. They live in far-off suburbs, or sometimes on the upper floors of houses the lower part of which is devoted to trade purposes. The incomes of these people vary from 200*l.* to 300*l.* a year, and their state may be described as one of respectable poverty. They probably would be satisfied with a small flat residence on the fourth or fifth floor of a large house, where they would pay a rent of from 30*l.* to 40*l.* a year, with taxes in proportion. Even at the present day they can obtain this, or rather its equivalent, in Paris, where the taxes, compared with those of London, are *nil*. Then, again, there are the married younger sons of gentlemen, and even noblemen, who hang on to the patrician quarters of the town, some of whom live in houses like that in which Becky Sharp and her husband enjoyed life upon nothing a year. Tall, narrow, inconceivably uncomfortable, and confined residences in which a great portion of the day is spent, and a great deal of labour wasted, in climbing the stairs,—stairs, too, of a shape and section unknown anywhere on the Continent, except, perhaps, in Holland. Everybody is not privileged to enter these aristocratic abodes, but I am told that there are houses in Mayfair where a moderately sized butler and a slender page completely block the entrance passage,—where to escort a lady easily and delicately, even one dressed as compactly as modern ladies are, from the ground-

* See pp. 1100, 1131, *ante*.

* Read an interesting article in the *Saturday Review*, Oct. 23 last: "Houses by Flats." The Reviewer, however, forgets that London houses are rarely the work of architects. House architecture in this city is done principally by estate agents and builders.

floor to the drawing-room, and *vice versâ*, requires years of practice, and months of humiliating failure. For the servants, the staircases of such houses are domestic treadmills, upon which master and valet, mistress and maid, are constantly knocking against each other. To be obliged to ascend five flights of stairs, as people with moderate incomes do in Paris, may seem frightful to the majority of Londoners, but they only do this twice or thrice a day at the utmost. The Londoner who pays with taxes often 400*l.* a year for his house, is for ever ascending and descending his deal "dog-legged" staircase, to fetch his gloves, dress for dinner, receive a visitor, dine, breakfast, lunch, and sleep. The occupant of a London house scales a greater number of stairs in the course of twenty-four hours than a Parisian living on a fifth floor does in twice that space of time.*

The traditional spirit of shabby gentility which is peculiar to English people is hardly known to the French, who, nevertheless, would be grievously offended if accused of doing or being what is not *gentil*. For instance, there is Brown, whom everybody likes, and upon whom you frequently call, and wonder why he does not "ask you up,"—the phrase is insular and Dutch, and savours of the staircase-ladders of England and Holland,—to the drawing-room; when suddenly you are horrified to learn that he lets his first-floor rooms to a newly-married couple, whose love was stronger than their common sense. Of course, you "cut" Brown—the parents, brothers, and cousins of the turtle-doves on the first floor having already "cut" them. Again, the Joneses, who made their money in tallow, were ruined by the introduction of composite candles, and took apartments over a shop! the degradation of which was only equalled by poor Mrs. Robinson, who, left a widow with a large house and a small annuity, took boarders!! It is certain that these three families would have been spared similar indignities,—would have never committed the same social crimes, had their home been Paris, and not London. In the latter place a family takes the upper part of a house, and, confident in the eminent respectability of the street and the street-door, hugs to itself the thought that the world will not know that it lives in apartments. One house of this kind resembles another, and they abound in this metropolis. In others, where the lodgers are less particular, the landlord and his wife pass the day in the front kitchen, and the night in the back parlour. Their surname, inscribed upon a brass plate, is affixed to the street-door, where a neat card, slily insinuated into the fanlight, whispers "apartments" to the passer-by. The front parlour, with the second-floor front room and the back attic, is let to perhaps two bachelors; the two drawing-rooms, the second-floor back room, the front attic and the back kitchen are let, may be, to a respectable middle-class family who are supposed to have taken the upper part of the house. Where the houses are a story higher the third floor is sometimes let to another family who cook in their sitting-room and contrive a small scullery on the staircase landing. One water-closet situated under the stairs on the landing leading to the basement is the common retreat of all the groups of people inhabiting the house. Sometimes, as in Soho, the different families hold communication with the outer world by means of a bell, the wire of which descends to the street-door, and terminates in a brass knob—the number of knobs indicating the number of separate interests inclosed within, over and above those of the landlord who monopolises the middle rail of the door, and answers only to the area bell. The house having been built to supply the wants of only one family, contains only two cellars and a stray cupboard, which the landlord takes, not for the purposes for which they were intended, but possibly for the procreation of rabbits and other domestic fancies indispensable to the comfort of inferior middle-class people. To descend to the lower strata of the metropolitan population, to thread the "slums" which fester upon nearly all the estates of the London ground-landlords, is to find houses which the worst municipal government in Paris would condemn. It has been shown that a family lodging in one single room in some of these slums—say in Bedfordbury—pays a larger relative rent for the cubical contents of its habitation than his Grace the ground-landlord pays for his house in Eaton-square. If the citizen of Paris has lost a due sense of individual responsibility and distinction by choosing to inhabit a self-contained separate residence in a huge "depôt of families," if the dweller in flats run a risk of moral contamination from the propinquity of his fellow tenants, surely the dangers which families occupying London lodgings must incur are ten times more imminent. In a London lodging-house, one family cannot shut its door upon another. The children must perforce mix, for the lodgings are not let off by floors, but are dovetailed into each other,—a bit of one floor into a bit of another, as has just been described. The modern craving for privacy and exclusiveness may be selfish, and even expensive, when the pecuniary advantages of co-operation are considered; but by the flat system of residence it is possible to exercise some watchful care over the younger branches of the family, to rule the servants, to be master and mistress of the household, and to shun a quarrelsome or otherwise immoral neighbour. In a London lodging-house only the worst features of life in common, as it was practised centuries ago, have been preserved; the best have been long and perhaps irrevocably forgotten.

The fashionable system of Co-operation, though it may fail when pushed to extremes, such as the attempted revival of several families and groups living and boarding in common, may perhaps be profitably developed in London by the construction of houses divided by floors of separate residences.* But an insuperable obstacle to the improvement of London dwellings lies in the manner in which land is held, and in the conditions imposed by the agents of the ground-landlords upon lessees desirous of building upon their estates. The most conservative *Review* in England has truly described the present complicated state of house property in London in an article entitled "The State of English Architecture," published a few years ago. The *Quarterly* Reviewer then said, and no one has satisfactorily contradicted him in this particular,—"Throughout London and its suburbs not one house in a hundred is absolutely freehold..... The houses are built not primarily as a comfort for the occupant, but as a security for the freeholder. . . . . London houses and the people of London are merely in accidental contact. . . . . Leasehold tenure, with its gambling speculation, extensive and often fraudulent building agreements, forbids prudent men of business to erect substantial, well-built houses." Again, later on, he added,—"The greater part of the house property of London belongs to no one in particular. . . . . First, there is the freeholder, who has a ground-rent; second, a leaseholder, with an improved ground-rent; third, the nominal proprietor, with the rack-rent; fourth, the first mortgagee, &c.; then the tenant with perhaps a sub-tenant, yearly, and probably some lodgers, by the week or month." Paris would never have been rebuilt within the space of a generation had the house proprietors been compelled to build upon land which was not and could never be their own. Who cares to build substantially for the supposed benefit of his superior's grandchildren? In what other capital of western Europe are houses erected at the present day of such trashy materials and defective workmanship as some of those which are springing up, mushroom-like, upon the great London estates of some English noblemen? It is affecting often to hear these ground-landlords deplore in concert the immorality of the lower classes of the metropolis. They attribute it wholly to the publican, and the drink he sells. But I take it that in the Great Diary of things left undone, the name of more than one noble freeholder is more than casually recorded. Better and differently-constructed houses must be erected for some of the middle-class population of the metropolis; but to do this well and effectually the feudal laws relating to the tenure of English land must be altered and reformed. "The Londoners," said the Reviewer above mentioned, "have so small an interest in their houses, that they might, with proper independence and moderation, urge the cessation by legislative means if necessary, of a custom which is in every way so injurious to all."

If the flat system of residence is ever to become generally popular with middle-class families, and perhaps with some above them in station—with people, in fact, who are compelled or who desire to live in London itself, the houses must be constructed with more art, and made more attractive than many of those which have already been erected in London by architects and builders. Several points in the Parisian house-in-flats are worthy of study and application to insular wants and prejudices. Importance must be given to the staircase, and a means of driving up to it under cover must be contrived. The entrance must be open during the day; and carriage access and exit imply a courtyard, which should be rendered an artistic feature of the building. Some of the houses-in-flats, however expensive, and, may I be forgiven the expression, aristocratic, which have been built in London, possess an unmistakable lodging-house air; and this is not dissipated by the shabby butler-looking person who, in the cast-off dress-coat of a gentleman, "attends" to the street-door. The floors must be of iron, entirely enveloped in some description of concrete, for iron is only fire-resisting when so treated; and a thickness of floor, including ceiling and parquetry, of 15 in., ought to be compulsory between each residence. The stairs, constructed without winders, should never exceed 6 in. in height of riser; and seats should be arranged on each landing. There should always be a well-lighted staircase for the servants and tradesmen. The bedrooms of the female servants must be placed in the flat which their employers occupy, and this should be enjoined by law. The men-servants should occupy rooms in the roof. If small areas or courts be introduced in the middle of any building, they should never be less than a certain superficies, to be calculated by the height of the surrounding walls. The staircases must be lighted at night, and warmed during winter. The porter and his wife should be lodged on the ground floor, and, to satisfy English prejudice, there must be no shops. In fine, the whole block of building must be far superior, both internally and externally, to the sort of house in which the middle classes of London now dwell, and with no Portland cement stucco about it except in the foundations. I am convinced that the erection in London of new buildings of this description, or the conversion of several old houses adjoining each other into floors of separate self-contained residences, would be appreciated by not only travelled but untravelled Englishmen—not only by middle-class families, but by all grades of English society, amongst which riches and poverty are indiscriminately allotted,—and that speculation of the kind would redound to the increased happiness of many worthy people; to the improved aspect of the streets in which large and lofty houses would be built; and,—what is paramount in this conservative country,—to the ultimate profit of the few owners of London soil, their agents, and middlemen.

William H. White.

* See "Town Dwellings," by Messrs. Ashpitel & Whichcord.

* It is certain that great and lasting benefit would accrue to all concerned if in some of the tolerably good localities of London where the by-streets are hopelessly given up to lodgings, the party-walls of say seven houses were removed, together with the staircases: one large staircase could then be contrived in the middle house, and admirable residences for families arranged by floors on either side of it.

NEW BOARD SCHOOLS, WALSALL.

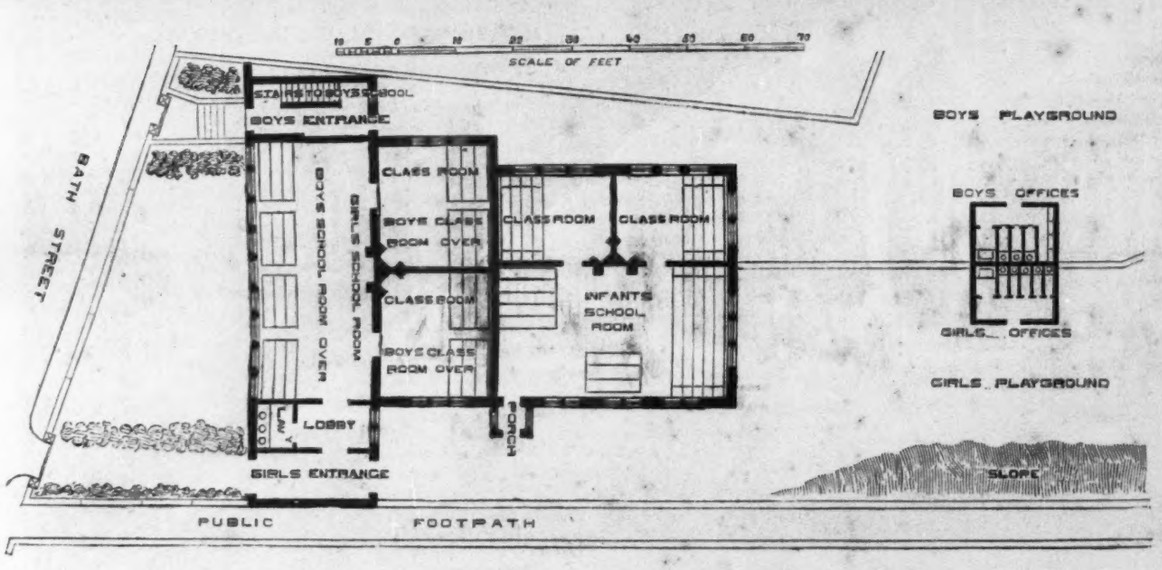
These schools are built in Bath-street, in one of the most populous parts of Walsall, and form a prominent object on the hill. They have been recently opened, designed to accommodate 600 children, in the proportion of 230 boys, 170 girls, and 200 infants, and make the third of a series lately built by the Walsall School Board.

The girls and infants are placed on the ground-floor, and the boys on the first floor, and to each school-room are attached two class-rooms, and convenient lavatories and lobbies. The space allowed for each child is 10 ft. superficial, exclusive of lobbies, and 150 ft. cube.

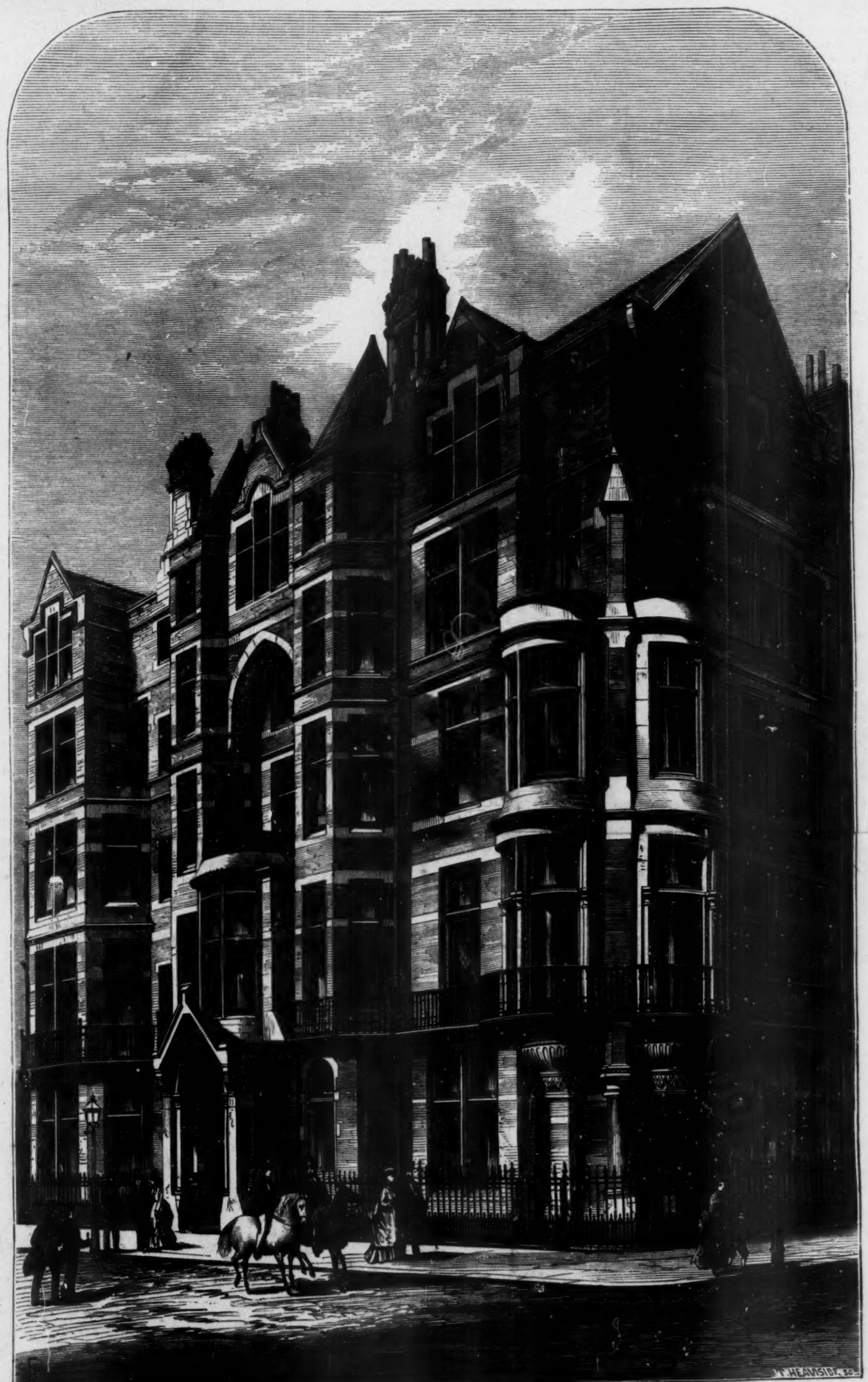
There are separate offices for the boys and girls, and large well-drained playgrounds laid with gravel. The schools are built of brick, with Box stone dressings, the principal front, the two returns, and the whole of the internal walls being faced with Garrison-lane pressed bricks, those for arches, splays, &c., specially made. The roofs are covered with plain tiles, laid with ornamental grouped bands, except that of the bell-turret spire, which is of green slates. The timbers used in the construction of the first floor and roofs are exposed, and are stained and varnished; all the desks and other fittings are of pitch pine, varnished.

The work has been executed by Mr. Thomas Taylor, of Walsall, contractor, from the plans and under the superintendence of Mr. T. Royse Lysaght, of Wolverhampton, architect, whose designs were selected in an open competition in the early part of 1874. The ironwork was executed by Messrs. Hart, Son, Peard, & Co.; the carving by Messrs. West & Son, of Leicester; and work connected with the warming by Messrs. Haden & Son, of Trowbridge.

The cost has been (exclusive of site) a little over 3,000*l.*, and has not exceeded the architect's competition estimate.



NEW BOARD SCHOOLS, WALSALL.—Mr. T. R. Lysaght, Architect.

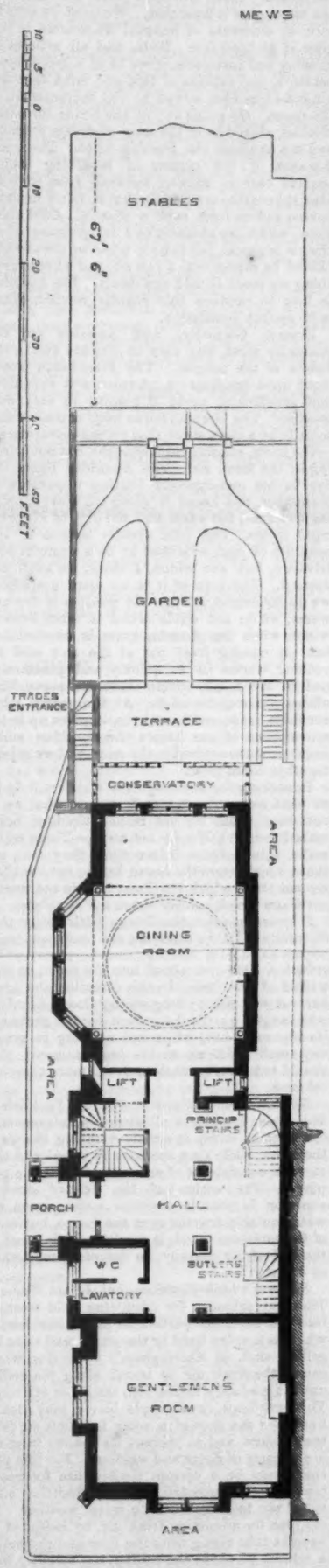


LONDON STREET ARCHITECTURE: HOUSE IN BROOK STREET, GROSVENOR SQUARE.

MR. CHARLES FORSTER HAYWARD, F.S.A., ARCHITECT.

LONDON STREET ARCHITECTURE: A HOUSE IN BROOK-STREET, GROSVENOR-SQUARE.

THE house which no doubt many of our readers have noticed for the last year or two rising at the corner of one of the streets leading out of Brook-street, and near Grosvenor-square, is a reconstruction arranged under the enlightened policy of the present Duke of Westminster, who seems to be not only a discriminating judge of what suits his own position in the construction of magnificent works for himself in town and country, but also a wise and careful administrator of the various details arising on a vast estate; taking advantage of special opportunities to remove difficulties and to encourage the construction of work of an architectural and artistic character in place of mere speculative building. The site was a very limited one after the removal (by fire) of the buildings formerly occupying it, as the new lines had to be considerably set back from the former ones, besides the loss of a party-wall. This fact, together with the requirements of plenty of light and air, necessitated the numerous projections in bay-windows and oriels, but the result is considerably more accommodation than formerly on the larger site, there being no dark corners anywhere. The colour, red brick and stone, was prescribed, and the character of the design approved as worthy of the position it had to occupy. If anything, perhaps the windows are too numerous, but internally none of them could well be spared without detriment not only to the design but to the proper distribution of light, air, and ventilation. The architect was Mr. Charles Forster Hayward, F.S.A., Montague-street, Russell-square, and the builder Mr. J. M. Macey, by whom the works have been very well carried out.



House in Brook-street, Grosvenor-square.

Plan of Ground Floor.

JAPANESE LACQUER WORK.

IN this country we rarely see articles of lacquer-ware of any great dimensions, the goods imported being chiefly little better than toys or trifles manufactured expressly for the European market; but in Japan the case is different. This style of decoration is applied to useful articles in daily household use, and to broad surfaces, and the lacquer industry is one of the permanent trades of the country, and gives employment to very many hands. The ground-work of lacquer consists in the sap of the "urushi" tree, which is one of the most valuable forest-growths of the island, its wood being exceptionally good, and its leaves furnishing the vegetable wax which is no inconsiderable article of export. The sap is drawn off by making a lateral incision in the trunk of the tree, allowing it to heal partially, and then, four or five days later, puncturing the wound, which will then have become covered over with a thin skin. From the orifice thus made the sap exudes, and is carefully transferred by a small spatula into a wooden jar. There is considerable art in choosing the proper time and the right place in the tree. Only one incision is made at a time, commencing from the root upwards, and all the trees in a plantation are taken in turn. This cutting, or wounding, process, is continued until each tree exhibits a series of cuts all up the trunk. The trees are afterwards felled. The drawing off of the sap is begun in the middle of summer, and continues to about the month of November. The best quality is that which exudes in the middle of summer, when the tree is full of the natural juices. When the sap is descending the tree in the autumn the quality is considered inferior. The "urushi" tree flourishes in the eastern portion of the empire, and is found with comparative rarity in the western provinces. The market price of the sap, or varnish, in Yokohama is about $100 per picul, or close on 4s. a pound. Some difference exists among the Japanese as to the date at which the art of lacquering was first discovered; but those who have most carefully considered the subject fix the date within ten years of the commencement of the tenth century of the Christian era. However this may be, it would appear to have attained some perfection 300 years later, for the name of a distinguished lacquer-painter who flourished A.D. 1290 is still handed down as the founder of a particular school of art in lacquer painting. From that time it developed until it attained its present perfection. The best, or "makiyé," style of lacquer-painting is practised at present somewhat in the following manner:—The design is drawn by the artist on the thinnest of paper,—and the Japanese, as our readers are aware, are adepts in paper manufacture,—and the tracing thus made is carefully gone over with a composition of mixed lacquer-varnish and vermilion; or, in other words, with a coloured and glutinous fluid which will easily transfer itself to the wooden surface selected for decoration. When the transfer has been effected, the work is left to dry for twenty-four hours, after which gold powder is dusted over it, and the pattern is lightly rubbed with a peculiar kind of charcoal in order to secure evenness of surface. The work is then rubbed with polishing powder and afterwards carefully wiped. Up to this point the outlines have been the main consideration. And if they have been reproduced perfect and unbroken all is thought to have gone well. A coating of varnish is now applied, and the work is polished with the finger and horn-dust until it assumes a rust colour. The fainter lines,—such as the tracing of leaves on trees, the petals of flowers, the wings of birds, and the characteristic markings of the human countenance,—are then added, often by the artist himself; more gold powder is sprinkled over the work from a bamboo tube, is lightly rubbed in with a brush, and afterwards carefully toned down with charcoal, and, after a subsequent polishing, the design appears in due form. All this takes time and costs money, and it must not be understood that the articles of household ware in general use in Japan are so elaborately finished. Such dainty gear is, as yet, only reserved for the wealthy, and the furniture of the middle classes can only boast a plain coating of varnish, or the baldest of outline pictures. Last year about 50,000*l.* worth of lacquer ware was exported from the island.

A very fine collection of Japanese lacquer ware, illustrative of the various branches of the art,—the raised, the incrusted, and the flat,—will be found just now in the rooms of the Burlington Fine Arts Club, Savile-row.

HEALTH, COMFORT, AND CLEANLINESS IN THE HOUSE.

THIS was the title of a paper read by Mr. Thomas Blashill, at the Society of Arts, on the 15th inst. The reader divided his subject under the following general heads:—The site and approaches; the fabric generally; lighting, warming, and ventilation; the kitchen and its dependencies; removal of dust and refuse; drainage,—treating each separately. We give his observations on,—

Lighting, Warming, and Ventilation.—If any man whose occupation is not chiefly out of doors will notice the time actually spent by him in the open air, he will be surprised to see how small a portion of his whole time it is, and how much he depends for light, warmth, and pure atmosphere upon the conditions which exist within the house. Townsmen will spend twenty to twenty-two hours per day indoors, women and children twenty-two to twenty-three hours, even in fine weather; sick persons, twenty-four. With the climate of weather reports and topographical descriptions they are, then, only indirectly concerned, for it is but the raw material of the climate in which they really live. The lighting, both natural and artificial, the warming, and the ventilation of the house thus become of great practical importance.

In this country sunshine is generally so precious that the house should be so placed, the windows so arranged, as to invite it into every room. The windows should rather be too large than too small. When the sun is too hot we can shade it by shutters and blinds, and as the air of winter is too keen some of the windows may have double sashes, between which a fern-case may be put, or they may open into a small conservatory. Thick plate-glass is much warmer than common glass, is cheaper in the end, and can be insured. I shall have occasion to observe on the importance of light in the working departments of the house. Broad daylight shows up dirt everywhere, facilitates work, saves gas; sunshine freshens the air, keeps it moving, and keeps it dry better than fires.

For artificial light, candles and lamps, when we can afford the cost of them, are better than gas. Gas is always burnt in excess, so that unless there be very good ventilation the foul air from it may be actually smelt, and, together with the heat, becomes oppressive. I believe no notion exists of the extent to which gas-burning is a source of damp. If we light an Argand burner, the glass chimney will in the first moment become

clouded with moisture, the next moment the moisture will disappear, driven off by the heat of the glass. But this formation of watery vapour really goes on as long as the gas is burning, being caused by the combination of the hydrogen in the gas with the oxygen of common air. In many houses all the gas-burners are lighted at nightfall, and allowed to burn till bed-time; some being kept alight through the night. In a large house which structurally was dry, a client of mine complained of damp within the movable wardrobes, where the silk dresses had become actually wet. Suspecting the gas, I found they were burning as much of it as would generate over two gallons of water per day, much of which must settle on smooth surfaces in any unwarmed, ill-ventilated parts of the house. A friend who went abroad during the cold of last winter, found the servants had aired his drawing-room by burning his gas night and day, till the walls were made thoroughly wet and the decorations spoilt. I once saw gas burnt for two or three weeks in order to dry some obstinately wet plaster, until the condensed water covered the ceiling and dropped plentifully upon the floor. Where much gas is burnt, some effectual mode of carrying off the products of combustion is essential. Where the air in the room is not changed rapidly by means of a suitable fireplace, the ventilating globe light may be used as the best substitute, but it is difficult to apply it so as to ensure durability and continued perfect action. I may mention here that the Parisian Building Act does not permit the concealment of any part of a gas-pipe, any leakage can therefore be detected easily and at once repaired.

From the condition of our climate the questions of warming and ventilating the house can best be considered together. During those long months when artificial warmth is most needed, artificial ventilation is also most needed; warmth supplies the necessary force, and may therefore be first considered.

There are habits, I might say fashions, as to warmth which override individual instincts. The houses of the middle-class have, in my recollection, become colder, except as to the unwholesome heat given out by gas. The roaring fire has dwindled, lighter clothing is worn in-doors, soft feather-beds, with close hangings, and other luxuries are discouraged, as well as hot stimulating evening drinks. Habits of personal cleanliness also involve increased coolness. Accepting these changes as improvements in themselves, we must admit that the general climate of the house needs more than ever to be ameliorated.

During the winter months, the temperature of passages, staircases, and bedrooms not specially warmed will range from 50° down to 40°, and even much lower. At such temperatures out of doors, and while in active exercise, men put on their overcoats and thick gloves, women wear warm cloaks and furs. At these temperatures in-doors we go shivering in thin clothing, change the warm for the cold, and allow children to run about more nearly naked than they would do in the warmer climate of France in August. It is as if a whole section of the population were training for an Arctic voyage, although they may be confident that the vast majority of them, all except the idle, the extravagant, and the unfortunate, will be more able to keep themselves in comfort as time goes on. Victims of this infatuation plead that they were always taught when young, to harden themselves, and to avoid "coddling" in the house. But the ancestors of these townfolk were countrymen, sportsmen, Highlanders, tillers of the soil, who lived out of doors, and would have despised our sedentary habits, small fires, and evening dress. Now the middle, or perhaps the middling, class stands alone in doing these things, for neither the rich nor the poor submit to them. The former try to warm their houses throughout, making every part habitable. The latter spend a large part of their money on the fire, papering up every hole and crevice, and almost stifling themselves, not, as is absurdly said, because they hate fresh air, but because they hate draughts.

In a comfortable house the inhabited parts of it are kept at a regular temperature throughout of nearly 60°, where you can sit in any part of a room, and be free from draughts. A draught is an artificial east wind, more dangerous than the natural wind, against which, when out of doors, we know how to protect ourselves. A comfortable house is also perfectly free from damp. Out of the house we guard against damp by suitable clothing, but if we get over so wet we do not suffer from it as we do from damp within the house. There must be a gentle movement in the air to give it freshness. We must be able to turn at moments of unusual discomfort to the glow of an open fire. Beds, and all articles of clothing and furniture, must be of a genial temperature, and articles of food and drink that are not hot should be served at the temperature of the room. On going out of the house our extra clothing should be of the same moderate warmth, and not at about the freezing-point. There are diseases of the organs of breathing which require care in passing suddenly from such an atmosphere into the cold air, but no fairly healthy person suffers from such a change. Cold ablutions, which are pleasant and invigorating when the air is genial, fail to be so when we are already chilled by exposure to a raw air, and when everything we touch is cold and damp. The question is how to produce this regular warmth along with perfect ventilation.

France, Germany, and America are the countries most like ours in climate and in the habits of the people. The Frenchman burns wood upon fire-dogs; a pleasant, but expensive and insufficient mode of heating in very cold weather. The German burns wood or coal economically in a close stove, that warms—overwarms—the room, causing little draught, but not bringing in the fresh air. The American lights the fire in his underground heating apparatus in November, and keeps it going till May, supplying fresh air, too warm and too dry, to his principal rooms. Our own system is that of the open fire of coal, admitted to be a wasteful contrivance, but one which, I think, we shall not discard. The love of it is no mere prejudice; we do not regret it when the weather is dry and warm, we do not circle round it much even in winter when the drawing-room is comfortable, but on coming fresh out of the raw cold air nothing warms us so quickly and pleasantly; and in the family circle there are many little offices we require of it. At the season when sunshine is scarcest with us it gives up to the atmosphere of our homes the sunshine which long ago nature stored in the mine, and we rejoice together in its glow.

In seeking for some system which will do for us what we want, we may first state what we do not want, what we are rather tired of being teazed to buy. We do not want,—Those which make things little better than they are; nor those which warm the house, but do not ventilate it; nor those which ventilate, but do not warm; nor those which neither warm nor ventilate.

Schemes which make Things little better than they are.—Of this class are the numerous small improvements of the common fireplace, which reflect a little more heat into the room, or save a little of the fuel. In this direction the great harvest was reaped long ago by Count Rumford, who taught us the best form for the grate and its adjuncts; but, while not refusing to accept any small additions to his improvements, they should not divert attention from more thorough reforms.

Schemes which Warm, but do not Ventilate.—This class comprises all stoves which resemble the German stove, in simply warming the air in the room, while they are usually inferior to that stove in carefulness of arrangement for the purpose. The action of the Gurney stove is superior, in that it supplies moist, warm air, which quickly travels over the house, but much of the moisture which it carries with it must, at the end of its journey, be deposited somewhere as damp.

Schemes which Ventilate, but do not Warm.—These are schemes for admitting cold fresh air into the room at particular parts, the best of which is a valve fixed in the outer wall near the ceiling, such as Sheringham's ventilator, which causes the fresh air to travel along the ceiling until it gradually mixes with the air of the room. This ventilator, or a simple *louvre*, may also be fixed over the door of a room to admit air from the passage, and so prevent its coming from the lower parts of doors and windows. For this plan there may be a certain limited use for rooms that are often crowded, and for admitting additional air to rooms during warm weather. An old plan for admitting fresh air, by means of an upright tube rising from the floor and projecting a column of air to the ceiling, has recently been successfully employed in hospitals, but does not seem to be necessary for an ordinary room.

Schemes which neither Warm nor Ventilate.—I notice those which consist of plans for bringing fresh air by a tube to the front or bottom of the grate, and so feeding the fire with it, chiefly for the purpose of noticing what pains people will take just to miss the thing that is wanted. For while all the expense of introducing pure air is incurred, it is simply used for feeding the fire, so that the air of the room is even less changed than with a common fire. The two schemes last named aim at the prevention of draughts and smoky chimneys.

For a large house it is necessary to admit warm air into the hall and larger rooms, either through coils of iron pipes fixed in or close to the rooms, or through a heating chamber near the furnace, whence it is conveyed by tubes to the several rooms, and is usually admitted through a grating in the skirting. The gratings should be large, as a sharp current of air, which, though much above the temperature of the room, is below that of the body, will have all the qualities of a decided draught. The gratings should not be put in floors, where they will admit dirt to the warm-air channel.

For warming and ventilating an ordinary house the first step is to place in the entrance-hall a good slow combustion stove, or an open fire with a heating chamber, amply supplied with fresh air from the outside of the house. This will bring a large portion of the house to a genial temperature; it will prevent cold draughts from windows and outer doors, foul currents from closets, and undesired smells from the kitchen department. The result should be to make the atmosphere in the hall not less sweet than that in the rooms, and nearly as pure as in the open air. In an old house a gas fire could be much more readily fitted, as the flue for carrying off foul air from it would be more easily constructed than the flue required by a fireplace or stove.

Every room should have a ventilating open fireplace, which may be of the class to which the Galton stove belongs. In this, fresh air is brought to the air-chamber at the back of the fire, is warmed and discharged into the room, not at the level of the mantelshelf, nor still less below that level, but quite close to the top of the room, so that it will travel along the ceiling and become gradually dispersed. The fire draws away cold air from the level of the floor, but a much smaller fire is required to raise a room to a given heat, and the current towards the fire is slight. I should prefer to see these stoves so constructed that the air-chamber at the back may be easily examined without disturbing the setting, and filtering materials, disinfectants, or means of generating ozone introduced when thought necessary. There would be little difficulty in utilising the waste heat from the fires of kitchens and lower rooms by making their flues pass through the fresh-air chambers of the bedroom fireplaces, and so causing a current of warm, dry air to those rooms, regulated by a valve. Indeed, all the heat produced by the fire may be utilised in this way, except so much as is necessary to keep up the ascending current in the chimney.

Another plan is to use Jennings's ventilating chimney-tubes, in which the smoke-flue is surrounded by fresh-air flues, and which, when carefully fixed, produce the same results. Both these schemes do for every separate room of a house all that has been mentioned in the case of the hall stove. By isolating the atmosphere of each room they render it more easy, in case of infectious disease, to keep the air of the sick-room from mingling with the domestic atmosphere and carrying with it the active principles of disease.

The expense of fitting up these ventilating fireplaces in a new house is inconsiderable. Their introduction into an old house would generally be practicable at greater expense. Where this cannot be done, pure warm air should be introduced into the passages and the rooms supplied with it from thence.

Thermometers should be placed in many parts of the house, as well as outside one or more windows, to indicate the external temperature. Tolerably good ones cost 2s. or 3s., and cheaper instruments may be fairly accurate, but should be tested with one of the better sort, or they are a delusion. I have one which is inaccurate to the extent of 10°. It is an error to suppose that the use of the thermometer demands greater intelligence than is usually possessed by the family and by servants.

In the summer, when there is no fire to induce a rapid change of air, there will be a gentle current up the chimney, and fresh air will enter the room. If the weather be damp a fire should be made; occasionally throwing open the doors of cupboards, moving the furniture from the walls, and filling the room with warm air, is the

most efficient plan for airing the house in the absence of bright warm weather.

The best way to keep a house dry and healthy is to use it, living in all the rooms either every day or by turns. A spare room is usually a damp ill-ventilated room, and an empty house deteriorates much faster than one that is occupied. When we leave home for a time, ventilation and warming should be carefully kept up.

In the discussion which followed,

The Chairman, Mr. R. Rawlinson, C.B., said, in the course of his observations, speaking of the supereminent value of human life, remove human life from this mighty mass of wealth in London, and it would become a vast heap of rubbish; and if human life were the only source of wealth, healthy human life must be the highest kind of wealth, and nothing could be expensive which tended to improve and to keep that life healthy. Of what value was 10,000*l.* a year to a man if he lived under conditions which created disease? Unfortunately, Englishmen seemed bent on blindly accumulating wealth, under the idea that the great aim and end of all was to have a large sum to bequeath by will at death, but no greater mistake could be made. After all, it was a question of education. The rising generation must be taught to take care of their own health, for without that all legislation would be futile. Health and its true conditions could not be disregarded, and many persons, as he knew by personal experience, afflicted with what was termed delicate health, owed their prolonged life to the care which they took of themselves; and he himself had seen scores of men apparently possessing three or four times his strength, go to their graves simply from the reckless way in which they chose to live.

RED RIVER SETTLEMENT.

MANITOBA is the name given to the new Province which the Canadian Government has recently added to its territory. Winnipeg is the only place as yet settled, it being the chosen seat for the government of the new Province. At present emigrants are taken by what is called the Dawson route, Mr. Dawson having made an exploration survey in the years of 1857, 1858, and 1859, commencing from Lake Superior to Fort Garry. This survey was a most arduous one, and occupied three summers and two full winters.

The country between Lake Superior and the Red River Settlement was regarded by Mr. Dawson as forming four divisions:—Lake Superior section; Height of Land to Fort Francis or the Lake Regions; from Fort Francis to the north-west angle of the lakes in the woods division; and from the lakes in woods to Fort Garry might be termed the final division.

Around Fort Garry are extensive prairies, and a more monotonous scene than a prairie cannot be imagined,—not a single tree to be seen for miles and miles, and as it is said it is easier to form a forest than to clear one, the quicker the Canadian Government set about forming a few forests, the better for everybody. There will be millions of acres for settlement, and my experience of Kansas, Nebraska, Dakota, and other new territories of the United States, makes me feel it incumbent on me to warn many who are doing well to pause and seriously think of the hardships to be undergone to make both ends meet out here. In fact, from general observation, a man to make a home in the prairies and wild woods of America, *unless with capital*, must work hard, and fearfully hard, and by the time (to use an American phrase) he will be ready to pass in his checks, he may have worked up a homestead, perhaps valuable, or as the case may be, a place where a man can live, if he only knows how to work, and all for the benefit of his grandchildren. There is a class of people that seem to thrive anywhere. The Mennonites, a sect from Russia who do not believe in war, have numerously settled around Winnipeg; a more hard-working, industrious class of people could not be found on the face of the globe. A farmer, perhaps worth thousands of dollars, who could live with a little ease, trudges and slaves away, just as if a cent. saved by his own labour would send him to Heaven. Yet there is a kindness among the people; they religiously help one another. Women, children, and men are all workers: no drones.

In the section known as the Height of Land, go in whatever direction you will on passing over a mountain-range, a lake is sure to be met with; the place may be described as a region of lakes, intersected with ridges of land running through them. In the wood division, there is an uninterrupted navigation on the Rainy River (so called from the continuous rainfalls), of about 120 miles.

The inhabitants of Manitoba consist of Hudson Bay men, half-breeds, and the real Simon pure Indians; the latter are most numerous on the Rainy River and Lake of the Woods. These Indians have a Government of their own, the regulations being made by the chiefs.

The Indians are very superstitious, and appeared to me to be heathens, and worship some unknown spirits, by beating a kind of drum, chanting, and incanting with most unearthly noises. The Indians around the section of Rainy River are far more moral and docile than those around Fort Garry, proving that white blood rather demoralises than civilises.

A great number of the Indians from the United States visit Manitoba, and having had a diplomatic training, are not slow to teach their friends the value of treaties which, I am bound to say, are faithfully kept to the letter by the Canadian Government.

The curse to the Indian is whisky; there are a set of scoundrels who trade with the Indians by means of liquor. If these fellows were taken and hanged right away for breaking the law, there would be fewer murders and crimes done by Indians.

The Sioux Indians seem to be a roving, warlike class of people, and, as the country becomes settled, I fear these Indians will show fight, unless the Canadian Government keep up a frontier defence party in the shape of mounted police.

A more general description of the country I must postpone for my next letter. QUERCUS.

RECENT DISCOVERIES IN ROME.

THOSE who have studied the topography of ancient Rome will be interested in the announcement made by the Roman correspondent of the *Morning Post*, of the very recent discovery of another portion of the Servian walls of Rome under the casino of the Antonelli Villa, on the Quirinal, which has just been demolished to make room for the new main street, entitled Via Nazionale, at its intersection with the Via del Quirinale, opposite the church of Santa Caterina da Siena. This discovery is the more important from the fact that it not only comprises a tract of the Servian circuit, but also one of the gates of that early period, very probably the Porta Fontinales mentioned by Varro and Livy. It is constructed of massive blocks of tufa, like the agger, and apparently owes its nearly perfect state of preservation to the circumstance of its having been built upon towards the end of the first century of the Christian era, judging from the fine quality of the brickwork, and put out of use by a complete change of level, as may be seen by the remains of a street paved with blocks of basalt which passes at an elevation nearly approaching the spring of the ancient arch.

On the other side of the Via del Quirinale is the Villa Aldobrandini, which has also to be cut through for the Via Nazionale. During these excavations further discoveries are anticipated, especially with respect to the Thermæ of Constantine, which occupied this locality. The Sindaco of Rome has promised that in case of any important ancient building being brought to light the course of the new street shall be deviated in order to preserve the ancient monument.

A DIVISION IN ARUNDEL CHURCH.

THE Duke of Norfolk, the lay impropriator, has bricked up the chancel arch of Arundel Church, and maintains his right to do so, not on the ground that he is lay impropriator, and therefore has possession of the chancel, but that it is a private chapel,—the Fitzalan Chapel,—and belongs to him as private property. Before the restoration of the church, the arch was boarded up on one side, chiefly for the sake of warmth, as the chancel was in a ruinous condition, and, owing to the extraordinary arrangement of the old pews, no chancel was required. When it was determined to begin the work of restoration, three years ago, the churchwardens wrote to the Duke informing him of their intention to open the arch. The answer was an intimation that the Duke did not intend to allow them to do so, and this was further rendered clear by the appearance behind the iron "grille" of a rough brick wall. A lawsuit against the Duke is talked of, but the vicar says he could look for no support from the inhabitants, who are mostly the Duke's tenants, and dare not stir in the matter. The Duke appears to be pursuing a dog-in-the-manger policy. Although he keeps the parishioners out of the chancel, he makes no use of it himself, and is allowing it to go to ruin fast; slates blown off are not replaced, windows broken are not mended. He is determined that the parishioners shall not have that which would make their church one of the finest in Sussex.

EDINBURGH ARCHITECTURAL ASSOCIATION.

AT a meeting of this Association, held within the rooms, No. 37, George-street, Mr. Thomas Bonnar, vice-president, in the chair, a paper was read by Mr. John W. Balmain, C.E., the subject being "Wrought Iron, with Reference to its Application to Architectural Purposes." The paper described the properties and uses of wrought iron, and its great adaptability to modern architectural as well as engineering requirements, and also its superiority to cast-iron in many respects, particularly in the case of girders of large span. By means of numerous diagrams and sketches, attention was called to recent applications of wrought-iron, architecturally and otherwise, these examples being contrasted with each other, with a view to point out the cases in which the material had been well and economically treated, and where not so. The importance, to the architect, of a knowledge of the strength of materials and of the strains to which, in the form of girders, tie-rods, &c., wrought-iron is subjected, as enabling him to avoid lavish waste of material and useless expenditure to provide a strength not necessary, on the one hand, and possible weakness, failure, and ultimate great cost in consequence on the other, was also pointed out, and various examples were adduced. A discussion followed.

MEMORIAL FOUNTAIN, MICKLETON, GLOUCESTERSHIRE.

ON the 13th inst., a fountain, erected as a memorial of the late Sir J. Maxwell Steele Graves, bart., and his daughter, Mrs. Bowen Graves, was inaugurated in this village. The structure, which is of Forest of Dean stone, elaborately carved, has been built by Mr. J. Clifford, of Ilmington, from the designs of Mr. W. Burges, and comprises portrait medallions, in Sicilian marble, of the late baronet and his accomplished daughter (authoress of "My Queen," and other popular lyrics), from the chisel of Mr. F. Scarlet Potter. The whole cost of this, and of two other less ornamental fountains, as well as that of supplying the village of Mickleton with water from the neighbouring hills, has been borne by Lady Steele Graves, of Mickleton Manor, and her son-in-law, Mr. F. Bowen Graves.

PALESTINE EXPLORATION FUND.

MONSIEUR GANNEAU, in the course of his exploration in Jerusalem, came upon the fragment of a statue, the head of some important personage, it being encircled by a wreath. He concluded at once that it was that of Hadrian. The features and general character do not show the refinement of the existing busts of that Emperor, who was one of the handsomest men of his period. The execution is coarse, and the treatment hardly equals that of the best artist of the time. A remarkable object on the wreath is an eagle, which would seem to identify this head with Herod, who is stated by Josephus, Antiq. xvii. 6, 3, to have erected over the great gate of the Temple a large golden eagle of great value, and had dedicated it to the Temple. This was an Act of such profanity in the eyes of the Jews, that, instigated by their teachers, the young men pulled it down and cut it into pieces with their axes. The eagle therefore would seem to be emblematic of Herod, and suggests the probability of this being his portrait. Should other evidences arise to confirm this supposition, this bust will be a singular and interesting illustration of Jewish history.

Joiners' Wages at Crieff.—The journeymen joiners of Crieff have demanded an advance from 6d. to 7d. per hour, to take place on the 1st of March next. The request, it is said, will be granted.

CASES UNDER THE BUILDING ACT.

MORTAR.

On the 1st inst., Mr. Jarvis, district surveyor of Camberwell, summoned Mr. Bowles, a builder, for not having solidly put together with mortar or cement the bricks in the walls of some houses at Peckham-rye. The case was heard by Mr. Chance at the Lambeth Police-court.

The District Surveyor defined what mortar is, and submitted specimens of the so-called mortar used in the walls, and urged that mould was mixed with the lime instead of sand. He was supported in his evidence by a builder of good reputation and large experience.

Mr. Bowles, the builder, in reply to a question put to him by the Magistrate, acknowledged the specimen submitted by the District Surveyor was not mortar, but he stated it was not a fair sample of the materials used. Upon this the Magistrate said he would send an officer to collect specimens from the walls, and adjourned the hearing of the case for a week.

Upon resuming the case, on the 7th inst., the officer submitted pieces of the so-called mortar, and on comparing them with those submitted by the District Surveyor the Magistrate said he could not see there was any difference between them.

The solicitor for the builder called a surveyor who stated he considered the material in dispute was mortar, and the Magistrate decided that as there was such conflicting evidence a surveyor should be engaged as an assessor to assist him in coming to a decision, and he named Mr. Lovejoy, of the firm of Drury & Lovejoy, to act in that capacity, and again adjourned the case.

Mr. Lovejoy examined the work, and attended the Court on the 14th inst., and gave it as his opinion that the composition complained of by the District Surveyor was not mortar.

The Magistrate therefore made an order for the builder to pull down the walls of the four houses.

ARE BAY WINDOWS BUILDINGS?

LORD MANNERS AND ANOTHER *v.* JOHNSON.

This was a suit in the Chancery division of the High Court of Justice, the chief object of which was to compel the defendant to pull down certain bay-windows which he had erected on the front of his two houses, Nos. 1 and 2, Palace-road, Roupell Park, Streatham. It appeared that the houses in Palace-road were about 80 ft. from the road and 40 ft. from one another, and the plaintiffs' case was that certain bay-windows which the defendant had erected to his houses, and which projected 3 ft. or 4 ft. from the main line of his house, which was itself some inches too near the road, was a violation of his covenant as to building, and injured the value of their property by destroying its privacy. The defendant insisted that the main walls of his houses followed the line of frontage he was bound to observe, and that the bay-windows were only projections from the main wall, and did not come within the words in his covenant, "any building"; that uniformity had already been departed from with regard to other houses in the Palace-road; and that what he had done had, as to Lord Manners, enhanced the value of the property; and as to the other plaintiff, had done him no injury.

The Vice-Chancellor said the question whether the defendant had a right to erect these bay-windows depended entirely upon the construction to be put upon the covenant contained in his conveyance. As the Vice-Chancellor read that covenant, it imposed upon the defendant a positive obligation not to erect any building nearer to the Palace-road than the line of frontage of the then present houses, which was not qualified or detracted from in any way. The question, then, was, were these bay-windows buildings within the meaning of this covenant? It was said that they were not, and that they were mere projections from the main building, like porticoes or verandahs. But it did not require scientific evidence to satisfy his Lordship that when bay-windows were carried up from the foundation of a house to its roof, they were part of the main building. Everything was constructed accordingly, and upon the plain meaning of the words there had been a clear violation of the contract. His Lordship accordingly declared that the buildings of the defendant, so far as they consisted of the bay-windows, constituted a breach of the covenants contained in his conveyance, and granted an injunction to restrain him from permitting them to remain for a longer period than six months from the date of the order.

SANITARY MATTERS IN VIENNA.

Sir,—Reading in your esteemed paper lately the interesting article in which are defined the necessities to a perfect city, I, like most other people who read that paper, was for the time as much enchanted by the prospect as ever we were in reading fairy tales or those of the Arabian Nights. The occupant of a comfortable English home, however, as he laid his *Builder* aside, and awoke from his dream, would awake to a less painful consciousness than some of us Continentals. If the writer, or any of his readers, ever were in Vienna, they will know some of its sanitary defects. Henry Fielding said in his time, he hurried over the Continent holding his pocket with one hand and his nose with the other. Is there any change to-day? The completion of the great water scheme might have been expected to have had as a first result a beneficial sanitary influence. While Viennese believe water to have a cleansing influence on themselves, they seem possessed of two firm ideas, viz., that filth is disposed of when removed from sight; and that where a drain or a water-closet is there must be a smell. Use of smell-preventers or "traps" seems quite unknown. Even in your kitchen you may have water. You draw your water over an open waste-pipe in connexion with the main drain, and your dwelling is a ventilator to the canal, and this principle is carried out in nearly all native work. Give an order to any of the almost innumerable firms executing such work, and everything will stand on your account as "English,"—the system, material, everything; and the most barbarous thing man ever invented is called an English water-closet. Truly, English skill and labour have much to bear if any one thinks the production English.

I notice the *Vienna Free Press* of a few days back extolling its native skill in the water-branch, and claiming for a firm here the honour of doing something for Paris. Now, if "English" is so often employed here when it ought not to be, it is employing "English" where it ought to be when we say the said firm has a staff of English workmen under the direction of Mr. J. Smeaton, formerly, I believe, of a London firm, W. Smeaton & Sons, sanitary engineers. Honour to whom honour is due. Y. Z.

HOW SHALL WE IMPROVE THE EDUCATION OF BRICKLAYERS?

One thing especially that strikes the thoughtful workman with surprise, in his daily vocation, is the wide-spread ignorance displayed by those with whom he has to labour side by side in the struggle for bread, and it is not only in reading, writing, and arithmetic that they show this deficiency, but in the practical carrying out of the calling which they profess. I will not attempt to explain the cause of this ignorance, but try and suggest some means by which those who call themselves bricklayers may be lifted out of their ignorance, and I am sure that all intelligent bricklayers will admit that it is time something was done. I know that there is a class of men who will not go with me, for this reason: they say that there are already enough skilled bricklayers, and that if they teach others to be as good as themselves they will outstrip their tutors, and the tutors will have to stand back while the others advance. For myself I say, let them do it if they can.

But now for a few suggestions as to the means whereby they are to be improved. First of all, I think that our time in the lodge-room could be more profitably used, if, instead of idle discussions, some papers upon the different applications of our trade were read and explained by some of our senior members. Then I would suggest that bricklayers' mutual improvement classes be commenced, where bricklayers only should be members; let this restriction be made, that it be well inquired into whether any one wishing to join is a bricklayer. There are plenty of schoolmasters who would gladly undertake the schooling of the members. Let the meeting-nights be not less than two in a week. Then I would suggest that a drawing-board, with all the necessary implements for striking out gauge work, also drawing instruments for plan-drawing, &c., be purchased. I would also suggest that the members throw open their doors to members of the Institute of Architects and Architectural Association, many of whom (if I understand some of the papers aright that are read by them) would avail themselves of the opportunity of mutual improvement. I should be glad to hear the opinion of some intelligent bricklayers on this subject; at the same time, I would say that I am willing to commence such a class if I can see that others are willing to join me.

J. P. Morris, Secretary,
London Lodge, M.U.O.B.

ARE PATENTS MISCHIEVOUS?

Sir,—If I may judge from the tenor of Sir Edmund Beckett's letter in the *Builder*, I should imagine he rejoices in the supposition that he is an inventor, and willing to work entirely *pro bono publico*. It may or may not be so; for the mere fact of making public such an idea as the method for oiling sash-pulleys is no certain proof either for or against. The gift of that which costs us nothing is not worthy in itself of extra commendation. Had Sir Edmund made public property an invention that had cost him years of close application and much anxiety and outlay in the construction of models, &c., then, and not till then, would his actions exactly coincide with his belief, viz., that he, being an inventor, is of opinion that the granting of protection by letters patent is detrimental to the commonweal. Would your correspondent kindly inform us in what way he considers it has an injurious effect on our manufacturing industries? If we are to continue as the first power (with regard to commerce) in the world, would it be politic to trust entirely to those who, with time, talents, and capital at command, may feel disposed to expend the same *pro bono publico, plus* a fraction of honour? I trow not, for there is every reason to believe that improvements then would be very few and very far between. It is an indisputable fact that the vast majority of inventions (of any note) patented in this country, but more especially in the United States of America, originate and are brought to perfection by mechanics, who, wishing to rise from the rank and file, exert themselves for the sole purpose of pecuniary gain; which, at the same time, tends indirectly to the good of the public; therefore withdraw protection and you annihilate, or at any rate, stunt, the inventive faculty. This is in a measure proved by the large number of inventions patented in the United States. Not that the Yankee is in any way smarter than John Bull, but greater facilities are offered in the form of cheap protection, consequently greater stimulus for renewed exertion.

As this is a subject of considerable importance to the public at large, and more especially to inventors, I trust you may see fit to grant this a space in your next impression.

T. Marcus Houghton.

THE ACOUSTICS OF CHURCHES AND THEATRES.

Sir,—After reading in your August Number the article on "Church and School Architecture," I feel inclined to protest against the acceptation as "American" of the views of your New York correspondent. On the contrary, I am sure that the majority here will approve of your remarks, and agree that the needs of a congregation vary much from those of the audience in a theatre. In connexion with comfort, and certainly with good acoustic effect and ventilation, there can be no doubt of the successful application of the severest forms of Mediæval building to our present uses. For twenty years we have enjoyed in Baltimore the use of a large clearstoried church, style Early English, which I designed with transepts and other stumbling-blocks to sound. But in building St. Luke's I kept in view the great importance of hearing well, and in it I made the first partial application of the principle of air movement towards the audience. Its success, acoustically, is complete.

The Baltimore Academy of Music, which was completed under my superintendence within the year, is a striking, and perhaps conclusive, example of the importance of the principle I have mentioned. It is a theatre as large as the New Opera of Paris, yet the sigh of *Lucia* (Albani), and the breathing of Ristori in the sleep-walking of *Lady Macbeth*, were heard throughout the house.

When I add that an unusually effective ventilation forms a necessary part of this system of acoustics, I hope to have indicated one good way to avoid the possible imperfections in hearing of the one span, or of the three-aisled forms of church building.

J. Crawford Neilson, Architect.*
Baltimore.

APPOINTMENT OF ARCHITECTS TO SCHOOL BOARDS.

Mr. J. H. Brown, of Norwich, has been appointed architect to the Woodton School Board.—Mr. W. Watson, of Wakefield, has been appointed architect to the United School Board District of Beal, Birkin, and Kellington, Yorkshire.—Messrs. Jackson & Longley, and Messrs. Hargreaves & Bailey, Bradford, have been appointed architects to the Bingley School Board.

* Mr. Neilson will perhaps send us drawings and particulars of his theatre.

THE BRIGHTON SEWERS.

INSTITUTION OF CIVIL ENGINEERS.

AT the meeting held on the 7th December, Mr. Thos. E. Harrison, the president, in the chair, the paper read was on "The Brighton Intercepting and Outfall Sewers," by Mr. J. G. Gamble, C.E.

The paper stated that the area affected by these works was about 1,800 acres, and comprised the whole of what was ordinarily called Brighton. Portions also of the parish of Rottingdean, east of Brighton, might be drained into the intercepting sewer. The range of tide varied from 22 ft. to 9 ft.

Until about thirty years ago, the sewage of Brighton was drained into cesspools. Such sewers as there were chiefly served to convey away water to the upper part of the beach. When, however, the houses were drained into the sewers, the sewers became a great nuisance, and were gradually extended farther and farther seaward. In 1870, at the time of passing of the Act for the present works, there were eight outfalls, all of which with one exception, were abolished, the sewage passing to the outfall at Portobello.

To remedy the evil Mr. Hawksley proposed still further to lengthen the pipes. Mr. Robert Rawlinson, C.B., suggested an intercepting sewer, with an outfall to the westward of the town. Sir Joseph Bazalgette recommended an intercepting sewer, with an outfall to the eastward, near Roedean Gate. Messrs. Maclean & Wright also proposed that the sewage should be taken in the same direction, but placed the outfall at Saltdean. The present position, Portobello, was recommended by Sir John Hawkshaw, who designed and carried out the whole of the work, the author being the resident engineer. Mr. Matthew Jennings originally took the contract for the works, but they were finished by Messrs. John Aird & Sons.

The intercepting sewer began at Hove-street, ran under the Shoreham-road nearly to the end of the Brunswick-square-lawns, passed under the beach till it entered again under the road at East-street, and excepting for a short distance at Rottingdean, it extended from thence under the Marine Parade and the Newhaven-road to Portobello. The sewer was of brickwork, and was of a circular section, 5 ft. in diameter, up to East-street; 6 ft. in diameter between East-street and the Steyne; 7 ft. in diameter from the Steyne to the Penstock Chamber, Portobello; and between the Penstock Chamber and the sea, the sewer was partly of brickwork, partly of three cast-iron pipes, 4 ft. in diameter, laid side by side; the total distance was 38,590 ft., or, 7¼ miles. The average fall was about 3 ft. in the mile.

The invert at Hove-street was	21	6	above low water of spring tides.
,, the Steyne	15	3	
,, Blackrock	14	3	
,, the penstock chamber	2	0	
,, the outfall	0	0	

Besides the main line, a considerable length of junction sewers was constructed to connect the old main sewer by suitable curves. Catch-tanks were inserted in the tributary sewers just before their junction with the main sewer.

There were three storm overflows in Brighton, at the former western, central, and eastern outfalls respectively. In the six months ending the 21st of December, 1874, the central overflow had come into operation three times, and the other two once. In the first six months of 1875, the storm overflow only came into operation once. In that at the Steyne, a weir was built in a slanting direction across the old sewer, and the ordinary drainage passed along a new sewer towards its junction with the intercepting sewer. The level of the top of this weir was about 2 in. higher than the old storm overflow, a level found sufficient to prevent the flooding of the lowest basements in case of the water getting past the house-drain flaps, and backing-up the house-drains. The storm-water was discharged by the former central outfall. An inlet had been constructed at the Steyne with penstocks to admit sea-water to flush the lower part of the sewer; this was generally used at spring-tides. Arrangements had also been made for working two sets of penstocks, one by which the tide should be shut out in case of the valves not acting, the other for penning back the sewage temporarily, so as to flush the outfall at low water. This chamber was provided with a passage to the beach, and with a louvred roof for ventilation. Between the penstock and the sea, the section of the sewer changed from a circle to a semicircular arch with a flat invert, and then again, by an arched chamber, to three iron pipes. The iron pipes were held together in a frame of greenheart timber, with wrought-iron bolts, and the pipes were retained in line by bolts which passed through lugs cast on them for that purpose. Beyond the mouth of the pipes the sewage ran in a trench only visible at low water during spring-tides.

The progress of the work, and the method of laying out the line of sewer, were next described. The works were begun in January, 1871, and were completed in June, 1874. The brickwork was 9 in. thick, except between Rottingdean and the penstock chamber, where it was 13½ in. thick, and between the penstock chamber and the sea it was 18 in. All this brickwork was set in Portland-cement mortar with the exception of the walls of the penstock chamber, which were in greystone lime mortar. Gault pressed bricks, or bricks made at St. John's-common, near Burgess-hill, were used in the inverts, and ordinary Gault or stock bricks in the arches. The bricklayers were paid 10s. for each 12-ft. length of 9-in. work, and 15s. for each 12-ft. length of 13½-in. work. Brick blocks of eight whole bricks and four half bricks were used when the bottoms were wet. Radial bricks were not required, owing to the large diameter of the sewers. More than six million bricks were used,—sixty-three courses being required in the inner ring of the 5-ft. sewer, and eighty-six courses in the 400 lineal feet of brickwork in tunnelling were executed per 7-ft. sewer. Pipes were laid under the invert to carry off the water, much of which was met with while the brickwork was being put in. When the junction was made between the brickwork from one shaft with that from the next, the pipes were plugged or closed by a valve built for that purpose. Under the sills at Portobello iron pipes were used, which were afterwards filled with Portland-cement grout. So great was the pumping that the wells at Rottingdean and the coastguard station at Portobello were seriously affected.

The ventilation of the sewer during the progress of the works was good in every portion where there were two openings. Where there was only one opening the air in the heading became bad, and openings to the cliff had frequently to be made.

The total cost of the work had been 100,000*l.* The cost of a lineal foot of the 5-ft. sewer, which was built almost entirely under the first contract and in open cutting, was 29*s.* The cost per lineal foot of the 7-ft. sewer, 9-in. work, which was done by tunnelling, was 27*s.* under the first contract, 41*s.* under the second. The extra cost of 3-ring work (13½ in.) over 2-ring work (9-in.) was, under the first contract, 12*s.*,—under the second, 16*s.*, per lineal foot. The cost of a ventilator varied from 20*l.* where the sewer, as at Cliftonville, was not far from the surface, to 160*l.*, where the ground level was, as at some places on the Newhaven-road, from 150 ft. to 160 ft. above the invert.

ALLEGED BREACH OF CONTRACT.

HORNE *v.* LABOUCHERE.

THIS was an action which came before the Exchequer Subdivision of the Supreme Court of Judicature, on the 7th instant, before Baron Huddleston and a special jury.

The plaintiff was a house-painter, decorator, &c., carrying on business in Fenchurch-street. The defendant was the ex-M.P. for Middlesex. Having recently purchased "Pope's Villa, at Twickenham," he entered into an arrangement with the plaintiff for the painting, &c., of that interesting and historical residence. On the 18th of March last the terms of the arrangement were reduced to writing, and they were in effect that the plaintiff undertook to paint the whole of the woodwork of the edifice in a workman-like manner for 140*l.*, with two coats of paint, &c. Soon after the work had been begun, namely, in April, the defendant found fault with it, complaining that the old paint had not been burnt off before the new paint was put on. There was also raised at this time the question as to whether the plaintiff ought not to have employed scaffolding in order to execute the work in "a good workman-like manner." The plaintiff declining to adopt the views of the defendant, the latter dismissed him, being dissatisfied with the manner in which he was proceeding. The plaintiff then brought the present action, claiming 58*l.* 10*s.* 1*d.*, being the alleged value of the work done, including interest, &c., on the amount.

The plaintiff and his witnesses gave evidence in support of the claim, declaring that the work was being properly done when the defendant dismissed Mr. Horne. He had burnt or scraped off the old blisters and paint where he thought it necessary.

It further appeared that in 1861 the villa was thoroughly painted outside by the plaintiff, that scaffolding was then used for that purpose, and the old painting was burnt off by burning-pans before the new work was commenced. An accident, however, occurred in consequence of the tower having taken fire and become damaged.

Mr. Labouchere was examined on his own behalf. He stated that in consequence of the old paint of 1861 not having been burnt off, the new work showed a great many blisters, and was not done properly and in a workman-like manner.

The surveyor of the Twickenham Local Board, who stated that he had thirty years' experience of such work, and Mr. Holmes, an architect and surveyor for about fifty years, declared that the old paint and blisters should have been burnt off, and that the work executed by the plaintiff was not done in a good and workman-like manner.

The jury found a verdict for the plaintiff for the full amount claimed.

THE NEW PICTON READING-ROOM, LIVERPOOL.

THE foundation-stone of the new Picton Reading-room, Liverpool, was laid on the 2nd inst. The new building (which is named in honour of Mr. J. A. Picton, F.S.A., one of the town councillors, and who has been chairman of the Library, Museum, and Arts Committee for the past twenty-five years) will be circular, and constructed on the same principle as the reading-room of the British Museum. The building, which it is estimated will cost 13,000*l.*, will consist of one large circular room 100 ft. in diameter and 60 ft. in height from the floor to the centre of the dome. It will be built of whitestone, and in the Corinthian order of architecture, and will be lighted from the top. In the front, facing William Brown-street, there will be sixteen fluted Corinthian columns, each 35 ft. in height, supporting a frieze and cornice 8½ ft. in depth, and surmounted by an open balustrade. Between the pillars will be niches for the reception of life-sized figures in stone. The room will be approached from William Brown-street by two bold flights of steps on each side, leading to a colonnade which runs round the building and connects the Free Library and the Museum, between which and the Picton Reading-room there will also be internal communication. Mr. Sherlock is the architect. Mr. Picton has well earned this mark of consideration.

SCHOOL BOARD SCHOOLS.

Sheffield.—Three new schools were opened under the auspices of the Sheffield School Board on the 1st inst. The Park school, in Norwich-street, is erected upon a site comprising 2,227 square yards of land. The total floor area of the rooms is 7,707 square feet, and the "breathing space" 122,438 cubic feet, the accommodation being for 739 scholars. At the Pye Bank school provision is made for 846 scholars. The site occupies an area of 2,500 square yards. The school and classrooms are on an extensive scale, and contain 8,606 superficial feet. The cost of erecting them will be about 8,000*l.* In these schools, as in the others erected by the Board, every facility is given for the scholars, both in respect of space and light. The desks are from the pattern patented by Mr. J. F. Moss. The Springfield school occupies the site formed by the junction of Broomspring-lane, Cavendish-street, and Broomhall-street, and is Early Geometrical in style. The school is carried up to a considerable altitude, covered playgrounds occupying most of the ground floor, save only on that part set aside for infants,—at the end adjoining the Convent wall in Cavendish-street. This latter school is suitably placed for infants upon the ground floor. The other schools are upon the two stories above the playgrounds, but over the infants' rooms there are no schools. Grenoside stone is the principal material used, the worked and finely-tooled dressings of the windows, buttresses, splays, &c., contrasting well with the deeper tone of the nobbled walling. The roofs are slated with blue Welsh slates, surmounted by bright red ridge tiles, and the windows are filled with semi-opaque glass. The internal arrangements of the school appear to be satisfactory. The area of the rooms is, alto-

gether, 8,154 square feet; the breathing-space, 134,994 ft.; and the number of scholars for which accommodation is provided, 752,—viz., 242 boys, 244 girls, and 266 infants. The cost of the site was 3,851*l.*, and the cost of the building will probably be from 7,000*l.* to 8,000*l.* The ironwork is by Messrs. Brawn & Downing, of Birmingham; Mr. Bodley, of Sheffield, has executed the stonework; and Mr. Spink, also of Sheffield, the woodwork. The stone carving is by Mr. Harry Hems, of Exeter. The school has been erected from the designs of Messrs. Innocent & Brown; and the clerk of the works was Mr. W. Dickinson.

Portobello.—The new Board school at Portobello is nearing completion. The structure is of one story. The main block is divided into two departments, juvenile and infant. A large hall, 54 ft. square, with an open roof, 27 ft. in height, occupies the centre of the building. This will be set apart as a mixed school, over which the head-master will preside. A sloping gallery fills a recess on the east side, and on the north and south sides are four class-rooms, two for boys and two for girls. These apartments are divided from the large hall by glass screens, so that the head-master will be able to keep an eye on every class, and so preserve discipline. The northern portion of the school will thus be occupied by boys for whom lavatories and other conveniences have been erected, and the opposite end appropriated to girls. The infant department is placed at the extreme south end, where a class-room has been run out from the main building. Archimedian screw ventilators are employed. The passages leading to the various out-houses are covered with corrugated iron. A house for the janitor is being erected. Messrs. Moffat & Aitken, Edinburgh, are the architects; Mr. A. Wilson, Tranent, having the contract for the mason's work, and Mr. H. Scott, of Portobello, that for the joiner's work. The cost is not expected to exceed 7,000*l.*

Wrexham.—The Broughton Board Schools were opened on the 29th ult. The buildings have been rather costly, the site being of such a peculiar character that strong retaining walls have had to be erected, at a cost of about 1,000*l.* Mr. W. Turner is the architect, and Mr. Samuels the contractor, who in a recent letter to the Board says he is a loser of 500*l.* by the undertaking.

Bulkeley and Ridley (Cheshire).—New Board Schools are in course of erection on the Ridley and Bulkeley-road, in the township of Ridley. Externally they are built of red and white stone, obtained from the quarries on the Bickerton and Peckforton hills, the white stone being used for the corners, windows, &c., the style being Gothic. The large schoolroom has glazed red brick half way up the walls, an open red pine roof, supported by white stone buttresses springing from the walls, and is both lofty and well lighted. The master and mistress's house adjoins the school, but has separate entrances. The architect is Mr. Bowers, of Nantwich, and the contract has been undertaken by Mr. Feet, builder, of Beeston.

THE LONDON SCHOOL BOARD AND THE HACKNEY "SHOOTS."

Twice, if not more often, in discussing sanitary matters at Hackney-wick, we described the site of the new London School Board School at Gainsborough-road and its vile surroundings. At the last meeting of the Hackney District Board of Works, a letter was received from the London School Board, complaining that the attendances at the above school had been seriously affected by the bad state of the approaches to the building; and the matter was referred to the General Purposes Committee for consideration.

At the same meeting a report was brought up from the General Purposes Committee, *in re* the Surveyor's Department and the Supervision of the Roads of the District. Mr. Runtz, the Hackney representative on the Metropolitan Board of Works, expressed his dissatisfaction with the report, and said that for many years he had tried to get proper supervision over the highways, but had always been thwarted by family and other influences, which even now had not disappeared. It was patent to every one who drove through the thoroughfares of this district that proper supervision was not exercised over the roads. In addition to the chief surveyor and assistant surveyor, it was eventually resolved, after a long discussion, to appoint two new officers, to be called road surveyors, the appellation of "road foremen" not being considered respectable enough for possible holders or candidates.

CHURCH-BUILDING NEWS.

Merevale.—The restoration of Merevale Church has been commenced, under the direction of Messrs. Paull & Bickerdike, of London. The building is an adjunct to Merevale Abbey, and is of unusual plan, the eastern or principal portion of the church,—in which the services are held,—being an exact square divided into a nave and aisles in the usual way. The date is the fourteenth and fifteenth centuries. To the westward of this, and opening into it, are remains of the thirteenth century, consisting of two bays, the aisles to which have been destroyed, but the central portion remains, and forms a sort of antechapel to the church. There are fragments of a very fine stone screen lying about the churchyard embedded in the earth and overgrown with grass. There is also a remarkable loft of oak, and of late date, in the church against the west wall, and a considerable amount of late painted glass in the windows. It is contemplated to restore and refit the whole building. The present works are confined to the north aisle.

Chilton.—The parish Church of St. Mary, Chilton, Suffolk, has been re-opened, after restoration. The exterior masonry and flint work have been generally repaired. The works to the chancel consist of decorations in gold and colour of texts, symbols, and ornaments, in lines, diapers, panels, borders, and strings; and alterations to seating and new windows in south and east walls. The carrying out of the works was entrusted to Messrs. Geo. Grimwood & Sons, of London and Sudbury; the general superintendence and decorative designs being by Mr. A. Grimwood. The church is fifteenth-century work, and contains an interesting wall tablet and two alabaster marble tombs, with sculptured recumbent figures, in memory of the Crane family. These, however, have been badly mutilated.

Shipley.— St. Paul's Church, Shipley, near Bradford, has been re-opened, after alterations designed by Messrs. Healey, architects, of Bradford. The west gallery has been removed, the organ which formerly stood there having been re-erected on the north side of the new chancel; the old pews have been replaced by oak benches both in the nave and north and south galleries. A screen wall of Caen stone is placed at the entrance of the chancel, the pulpit, base, and steps being combined with it. The pulpit and choir-stalls are of oak, and of elaborate character. Several special offerings have been made, such as a brass eagle, by Messrs. Potter; an alabaster font and two memorial windows, by Messrs. Powell, of Leeds. Including external repairs, the total cost of the restoration has been about 4,000*l.* Messrs. Whiteley, of Leeds, were the contractors.

Edlesborough.—The chancel of St. Mary's Church, Edlesborough, has been re-opened, after restoration at the expense of Lord Brownlow. The original Purbeck mullions and shafts of the east window were found to be so decayed that it was necessary to restore them in stone, following out the details of the old work. The whole of the tracery of this window was taken out, the decayed parts renewed, and thoroughly reinstated with new stone; this was a work of much trouble, on account of the richness of detail and the size of the window. The roof has been entirely taken off, and all the defective rafters replaced by new to assimilate with the old ones; and all the old colour-wash has been removed. The rood-screen, a very fine specimen of the work of the fifteenth century, has had the paint removed from the east side, exposing the old oak. The whole of the chancel is paved with tiling, by Mr. Godwin, of Hereford. The north door in the chancel has been opened out and restored, and a new external lobby added, forming a passage to the north transept. The restoration has been carried out by Mr. Chappell, builder, of Tring; Mr. Withers, of London, being the architect; these gentlemen also restored the nave in 1867. Mr. King, of London, has acted as clerk of the works. The cost of restoring the chancel will be upwards of 1,000*l.*

Stourport.—Arrangements are in progress for the erection of a new parish church at Stourport. Sir Gilbert Scott has prepared plans for a building capable of seating 1,200 persons, at an estimated cost of 25,000*l.*, but owing to difficulty in obtaining the whole of the funds, it is under consideration whether a smaller church, capable of seating 900 persons, at a cost of 15,000*l.* or 16,000*l.* shall be erected, or whether, as Sir Gilbert Scott has suggested, his original designs be partially carried out at first by the erection of four bays of the nave, with chancel, vestries, and organ-chamber, the west end being temporarily bricked up till funds can be obtained for further extension and for the erection of the tower.

Stokesley.—Stokesley Church, Yorkshire, was re-opened on the 2nd inst. by the Archbishop of York. The body of the church was until lately occupied with high-backed, square, old-fashioned pews, and there were three cumbrous galleries. These have all been removed, and the church furnished throughout with open seats of oak. Under the old system of pews and galleries, the number of seats was 520, but now, with the substitution of open sittings and the abolition of the galleries, the accommodation is for 470, or a decrease of but fifty sittings. The work has been done by Mr. White, of Whitby, joiner. The flooring has been repaired, a new pulpit erected, and the church fitted with a warming apparatus, designed by the Rev. C. P. Peach. The total cost has been about 530*l.*

Abingdon.—At a vestry meeting held at the parish church of St. Helen, Abingdon, on the 2nd inst., the committee to whom it was some time back referred to obtain a report from an architect or engineer as to the condition of the tower and spire, presented a report from Mr. F. W. Shields, the engineer to whom they had applied, who, together with Sir Gilbert Scott, had thoroughly examined the building. The report stated that the top of the spire was deflected from the perpendicular to the south and to the west, that the south-west turret was very much cracked and damaged, and that the western face of the tower was also cracked. These cracks were all old. It was necessary to remedy the defective state of the tower without delay, and the report recommended that four buttresses be built, one at each of the four angles of the tower, that the damaged stonework in the turret be cut out and replaced stone by stone, that certain alterations be made in the floor of the tower, and that the crack at the base of the spire be stopped with cement.

Highgate.—The new church of St. Mary, Brookfield, Highgate-rise, built from designs by Mr. Butterfield, was consecrated by the Bishop of London on the 7th inst. The new church is to be a chapel of ease for the parish of St. Anne's, Highgate. It stands on the edge of Lady Burdett Coutts's property, and is also on the boundary line between the rural deaneries of St. Pancras and Islington.

Derby.—St. John's Church, Derby, has been re-opened, after alteration and decoration. A new organ, by Willis & Son, has been placed at the east end of the north gallery. The space gained by the removal of the old organ from the west gallery has been fitted with seats, and the west window is now visible. The whole of the woodwork of the interior has been painted, grained, and varnished. The ceiling has been coloured a pale French grey, and the panels of the ceiling picked out with ultramarine and vermilion, the timber trusses being stained dark oak. The chancel walls, to the cornice running round from the sills of the windows, have been decorated by Mr. W. Cantrill. A choir vestry has been formed under the new organ.

Lincoln.—The foundation-stone of the new Church of St. Andrew, Lincoln, was laid by the bishop of the diocese on the 30th ult. As originally contemplated it was intended to provide a church which should cost about 8,000*l.*, and which should accommodate a large congregation; and the Rev. Prebendary Swan, who is one of the principal proprietors of the soil in the neighbourhood, generously gave a site, at the corner of Portland-street and Canwick-road, and further a sum of 1,000*l.* towards the cost of the building, the Bishop presenting the committee with — besides a handsome contribution in money—the fabric of the Old St. Martin's Church—the material of which will be used in the erection of the new Church of St. Andrew. The new church will not be, for the present at any rate, what it was originally intended it should be, inasmuch as instead of having, as required, some 8,000*l.* or 9,000*l.* at their bankers, the committee have at present only some little over 3,000*l.* to their credit, and with this in hand it is proposed to at once provide accommodation, on the site already named, for about 400 worshippers, which it is estimated will cost about 4,700*l.*, and by degrees the committee hope to proceed

in the good work till they shall have attained the completion of the original plan. The plans are prepared by Mr. J. Fowler, of Louth, and the work will be entrusted to Messrs. Huddleston & Son, of Lincoln.

SCHOOL-BUILDING NEWS.

Ramsgate.—The memorial stone of the St. Paul's Mission School, King-street, Ramsgate, was laid on the 1st inst. by Mr. J. G. Talbot, M.P. The building will comprise a schoolroom, class-room, lobbies, mistress's house, offices, &c., and an infants' nursery. The edifice will be built with bricks, with Bath stone dressings. The principal front in King-street will have four gables with stone coping, the principal gable being in Belmont-street. The walls will be ornamented with bands of red and black bricks and Doston stone. The arches of the windows will be constructed alternately of red and black brick and Doston stone. The building will be covered with blue and red slate, and will be surmounted with a bell-turret, 60 ft. in height. The school will accommodate 150 boys, girls, and infants. The nursery is to be 30 ft., by 20 ft., and is calculated to accommodate about forty children. Mr. L. Shrubsole, builder, of Faversham, has taken the contract for the erection of the building, and the designs have been prepared by Mr. Robert Wheeler, of Tunbridge Wells.

VARIORUM.

"TRAINING Schools and Training Ships: for the Training of Boys for the Navy, Army, and Mercantile Marine" (Staunton & Son) is the title of a well-timed pamphlet by Mr. Edmund E. Antrobus, F.S.A. It has for its chief object the advocacy of some such Bill as was introduced, last session, by Captain Bedford Pim for the founding of county training schools and ships, and deserves wide consideration. It is desirable that the position of our navy and mercantile marine should be placed before the public as much as possible. The latter service has drifted into a lamentable condition, and thereby has deprived our country of this "reserve" which formerly existed for the supply of men for the Royal Navy in the time of war. Mr. Edmund Antrobus is an active justice of the peace for Middlesex, who has particularly interested himself in the Middlesex Industrial School at Feltham, and has given much consideration to the subject in question. We quite agree with him that to have at command a reserve of men properly trained and accustomed to discipline, not only for the immediate wants of the navy in time of peace, but to meet all contingencies, is of vital importance.——The *Garden*, for the future, will, every week, contain a coloured plate (full-page size) of a beautiful or rare flower or fruit, of proved value for gardens. The aim is to illustrate, as nearly as may be in their natural colours, the finest of new flowers and fruits. This addition will greatly add to the attractiveness of the publication.——"The Doom of St. Querec," a Christmas legend, by F. C. Burnand & Arthur A'Beckett (Bradbury & Co.), is a wild, weird story, with some good illustrations; the whole suggestive of a dream after a supper of pork chops. The lovers of diabolic legends will find it satisfactory.——The frontispiece of "Punch's Pocket Book" for the coming year is an amusing caricature of Mr. Long's fine picture, the Babylonian Marriage Mart. The meaning of some of the other illustrations is less clear than it might be.——From Messrs. Partridge & Co. comes a packet of well-known serials for the young, now formed into little volumes for the year,—"The Friendly Visitor," "The Infant's Magazine," "The Children's Friend," "The Family Friend," and others,—all remarkable for their good wood-cuts. The last-named, "The Family Friend," includes illustrations of several of the English cathedrals. "The Band of Hope Review," issued by the same publishers, and "The British Workman," continue their good course. The wood-engravings in the latter are as good as any of their kind that are done.

St. Michael's, Queenhithe.—Another of the City churches has been doomed to demolition, and the closing service has been held. The church in question is that of St. Michael, Queenhithe, situate in Upper Thames-street. A church stood on the site of the present one as early as the year 1181.

Miscellanea.

Decoration of a Birmingham Church.—St. Peter's Church, Dale End, Birmingham, has lately been closed for repairs and decoration, the work having been entrusted to Messrs. J. R. Lee & Co., of Ann-street. The large ceiling is panelled in nine panels, and each panel is tinted in subdued primrose. The enrichments which surround them are relieved with gold and picked out in tints. The stiles round the panels are of warm neutral tints, enriched with ornament and lines. In the centre panel around the ventilating gauze is the honeysuckle and lotus ornament in self-colours; in the small panels is a stile and sinking line round the same. The cove, which is 10 ft. in depth, is of a warm neutral salmon colour, relieved with a warm grey stile, enriched with medallions with the keys of St. Peter on either side, the crown and inverted cross, on a rich blue ground, the whole being surmounted with ornaments and lines in colours, with the Tudor rose and star in gold. In the centre medallion over the chancel is the monogram I.H.S. The cornice is picked in in gold and colours; the frieze is a rich blue, with an ornament of self-colour, relieved with medallions of red and gold, with devices thereon. The walls are of a quiet salmon colour, with a warm dado; the two colours being divided by a dark line, enriched with a small appropriate ornament above. The window linings are of a cold cream tint, the mouldings being picked in in colours, with a Greek ornament on the flat. The gallery fronts are in three tints, relieved with gold, with lines and ornaments to harmonise with the organ; and the seats are done in two rich browns, relieved with black and gold. The chancel ceiling is picked in in colours, with blue backgrounds; the enrichments are relieved with gold, and each side is diapered in colours and gold; the pilasters are marble, with black marble bases. The gasfittings have been supplied by Messrs. Blews & Son and Mr. Barrett, and the new font is the work of Mr. Bennet. The vestibule and baptistery have been paved with tiles supplied by Messrs. Craven, Daniell, & Co.

"The Lions at Home."—A correspondent, who signs himself "The Carpenter," says, with reference to our observation as to the apparent want of means of ventilation save by door or window, that,—"In the external wall are twelve ventilators (Hit and Miss) under the tiers of stone steps, by which air is admitted to the building after permeating through inner ventilators of perforated metal, inserted in the risers of the said steps. In addition to this, and in conjunction therewith, a current of air is constantly flowing above the ceiling by means of fixed louvre ventilators, and the vitiated air which escapes, through openings in the ceiling, covered by framed flaps workable by line and pulley at will, is at once caught by this current and quickly hustled 'outside'! The 'heating apparatus,' the 'seat' of which is in the basement next the windows, was done under the superintendence of Messrs. Weeks & Co." That the animals may be in the open air in fine weather, outer dens (four in number) are being erected, 45 ft. by 31 ft., open to the sky (except from open ironwork). Our notice was intended to be anything but ill-natured, and we willingly add, now we find some one to tell us, that the architect of the building is Mr. Salvin, and that the contractors are Messrs. Simpson & Son, of Baker-street.

Water Companies' Accounts.—There has just been presented to the Lambeth Vestry, in compliance with its request, a report upon the accounts and charges of the two local water companies, and the proposed legislation of next year. The companies are the Lambeth and the Southwark and Vauxhall. The report is drawn up by Mr. William Storr. It summarises the accounts for seven half-years, the time during which Parliament has required them to be published in their present form; it vindicates the legal conduct of the companies in increasing their per-centage charges with the increase of valuation; it gives their charges and compares them, and states objections of principle to supply by meter, and to extra charges for gardens, baths, &c.; it embodies the recommendations of the Rivers Pollution Commissioners condemning Thames water, and it sums up in eight resolutions the conclusions suggested by the consideration of the whole subject.

House Moving.—This feat, quite a common occurrence, even on a gigantic scale, "over the water," was successfully accomplished, on a small scale, at Arbroath the other day. Owing to damage done by the sea, during the recent gales, to the boat-building shed of Messrs. Watson, it became absolutely necessary to remove the building to a vacant site some 20 ft. further inland. The building, which is of timber, substantially built, is 42 ft. in length and 22 ft. in breadth, with roof, windows, &c. To have taken it to pieces would have wasted material, besides taking away its present finish. The alternative was to remove it bodily. The building was framed upon a series of strong timbers sunk into the earth. A site having been selected and carefully measured, holes for these timbers were dug at the regular distances, depth included, and the ground carefully prepared. The building having been secured by stays and braces to prevent shaking, was then lifted so high as to leave the timbers clear of the ground. Ways having been laid, the structure was rested on them, drawn gently along till the timber-pillars were above the holes prepared for them, into which they dropped. The whole business was accomplished in six hours.

Carpenters' and Joiners' Soiree at Liverpool.—A *soirée*, followed by a concert, took place on the 9th inst., at the Hope Hall, Liverpool, in connexion with the Amalgamated and General Union Societies of Carpenters and Joiners. Mr. W. Rathbone, M.P., presided. Mr. John Cogley, the secretary, read the report of the two societies, from which it appeared that in the year 1864 they numbered 150 branches, 6,230 members, with a reserve fund of 5,666*l.* 10*s.* In 1874 the societies had increased to 406 branches, 23,518 members, with a reserve fund of 50,979*l.*, being an increase in the ten years of 256 branches, 17,288 members, and 45,312*l.* 9*s.* 11*d.* The income during the year 1874 was 49,367*l.* 7*s.* 4*d.*, and the expenditure 35,178*l.* 8*s.* 8*d.*, showing a saving in the year of 14,188*l.* 18*s.* The benefits paid in 1874 were, to men out of employment, 4,101*l.*; for loss of tools by fire, water, or theft, 1,046*l.*; for sickness and superannuation, 9,966*l.*; accidents to men disabled, 2,100*l.*; funeral benefits, 2,218; benevolent purposes, 540*l.*; and trade privileges, known as strikes, arbitrations, and law expenses, 2,760*l.*

A Poor Reward for Long Service.—At a recent meeting of the Sherborne Local Board of Health, a report was presented containing the following passage:—"It appears to be quite clear that increasing age and tendency to illness have prevented the surveyor from efficiently discharging the duties of his office at certain times for some time past; while, on the other hand, from the important works which are now being carried out, his attention and careful supervision are more than ever required. We therefore recommend that the Board should at once give the present surveyor notice to terminate his services, and that a younger man should be forthwith chosen. At the same time, inasmuch as the present surveyor has faithfully served the Board for a period of more than twenty-four years, we recommend that he should be retained to assist the new officer at a salary of 20*l.* per annum." The report was adopted, subject to an amendment giving the ex-surveyor 25*l.* instead of 20*l.* per annum.

Compensation Case at Liverpool.—In the Sheriff's Court, St. George's Hall, Liverpool, on the 25th ult., the case of Cliff *v.* The Cheshire Lines Committee was heard before a special jury. The claim was in respect of a dwelling-house and land in Sandforth-road, West Derby, taken by the railway company. Messrs. Picton, Hornblower, Sherlock, Shelmerdine, and Bradley, architects and surveyors, were examined on the part of the claimant, and Mr. W. H. Weightman and several surveyors from Manchester on the part of the company. There was a remarkable difference between the gentlemen examined on the two sides as to the value. The valuations of the claimaint's surveyors were 10,000*l.* and upwards, and those of the company's surveyors little more than one half. The jury awarded 9,700*l.*

A Carpenter Fined for Intimidation.—A carpenter named Joseph Parkin was recently fined 2*l.* at the Barnsley Police Court for intimidation. The charge against the defendant was that of asking two men, as they were going to their work, whether they did not know that they were "blacksheeping," and telling them that if they thought anything of themselves they would go away.

The Disposal of Sewage.—In the course of an inquiry held at Twickenham on the 1st inst., Major Tulloch, R.E., the Government Inspector, gave it as his opinion that no system of mechanical and artificial downward filtration would meet the requirements of the Thames Conservators as to effluent water. In consequence of the Twickenham Local Board having decided to adopt this plan in the disposal of their sewage, they have been obliged to suspend their works. Borrowing powers to the extent of some 24,000*l.* were some time ago obtained, it then being understood that irrigation would be the system adopted, but as no land for the purpose could be obtained they have been compelled to change their intention. The estimated expenditure being exceeded, the Board applied for a further loan, and hence the inquiry. Major Tulloch, finding that no definite plan was proposed, stated that he could not recommend the Government to lend the money.

The Spire of St. Mary's Church, Oxford. Captain L. J. G. Ferrier, R.E., in fulfilment of a promise he made during the proceedings of the Architectural and Historical Society's visit to Merton College on the 20th ult., has tested, as far as possibly could be done, the amount that the spire of St. Mary's Church is out of the perpendicular. This was done by repeated observations with a 5-in. theodolite, from a point close to the south of the Radcliffe Library. From absolute measurement, the deviation as observed was 1 ft. 9¼ in., and from calculation 1 ft. 8⅞ in., giving a difference of $\frac{7}{32}$ in., which is very trifling. No deviation from the perpendicular was observable in the tower from its base up to the point of the window over the north door, leading, therefore, to the conclusion that the deviation existing is due rather to an imperfection in the original construction than to subsequent settlement. The top stone of the spire is 188 ft. 6 in. above the gravelled path of the churchyard.

Lambeth Palace Library.—The appeal recently made for contributions towards a collection of works on Kentish literature, antiquities, and topography for this library, has met with much success. The librarian, Mr. Kershaw, still asks all who take an interest in the subject to contribute what they can. As an adjunct to the ancient records of the see and diocese of Canterbury, preserved here, the Kentish collection will be of great assistance in the researches of those to whom the library is so freely open on three days of each week. The following, among other works, have been contributed by their respective authors:—"History and Antiquities of Kemsing Church," *by E. H. W. Dunkin*; "Historical Sketch of Lyminge," by R. C. Jenkins; "History of St. Martin's Priory, Dover," by J. Tavenor Perry; and "The Church and Fortress of Dover Castle," by Canon Puckle.

The Slate Trade.—At a meeting of the Carnarvon Slate Club, held at Carnarvon on the 11th inst., a rise of 10 per cent. on the existing tariff price, which came into operation on the 1st of November last, was unanimously resolved on, such rise to take effect from the 1st of February next. Some of the most influential members of the club suggested the propriety of a resolution that the new price should rule for twelve months certain, but the majority thought it advisable not to bind themselves for so long a period. The Slate Club (says the *Mining Journal*) regulates the price for the home trade, which is at present very brisk, the demand greatly exceeding the supply, and there appears to be every prospect of this continuing, but some doubts were entertained whether a similar rise will take place in the export foreign trade, which is almost exclusively confined to the Festiniog slates shipped from Portmadoc, until later in the spring.

Mr. and Mrs. German Reed's Entertainment.—One of the best pieces produced at the Gallery of Illustration, and which enjoyed an unusually long career of success, was poor Shirley Brooks's "Our Card-basket." The piece has been revived at St. George's Hall, and the celebrated trio, the Sisters Pry, represented by Mrs. German Reed, Mr. Alfred Reed, and Mr. Corney Grain, are as amusing as ever. A recent novelty, "A Spanish Bond," by Mr. G. A'Beckett, music by Mr. G. Reed, deals with a bond of revenge, not of the "needful," and ought, contrary to the laws of our country, to prove more valuable to the lessees than the lowly-quoted Spanish bonds seem to be at present to their owners.

Resignation of the Medical Officer of Health for St. Pancras.—Dr. Thomas Stevenson, medical officer of health for the parish of St. Pancras, has tendered the resignation of his office, which he has held for a period of seven years, stating the chief cause of his doing so to be, "That while I am held responsible for the sanitary condition of the parish, I am denied that assistance in out-door inspection of houses either visited with contagious diseases or habitually in an unsatisfactory condition which I believe to be necessary. I feel that the severe condemnation which a house-to-house visitation of the poorer parts of the parish has received from a majority of the Sanitary Committee must of necessity hopelessly weaken my authority with the sanitary inspectors, and render nugatory my efforts to carry out the Sanitary Acts."

Sheffield Architectural and Archæological Society.—The annual meeting of this society was held on the 2nd inst., the Rev. J. Stacye, M.A., president, in the chair. The report and statements of accounts showed the society to be in a sound financial condition, but the amount of work done was scarcely commensurate with the opportunities afforded. The president and other officers were re-elected. A scheme was laid before the members for constituting the society a section of the Literary and Philosophical Society, under which it is believed both societies will reap advantages. The proposal met with the unanimous approval of the members, and now only awaits the acceptance of the Literary and Philosophical Society, whose annual meeting is held in January.

The Need for Beautiful Surroundings.—Mr. George Dawson, in a recent lecture at Birmingham, said:—The office of a man's house was not only to give shelter, food, and meat, but also to surround his children with those fair sights and sounds by which the sense of beauty might be developed. There were houses in that town in which not a poem was read nor a song sung throughout the year, and yet people wondered why their children were vulgar. The beauty of towns was one of the most neglected duties and one of the most deserving. If a town was beautiful people took pride in it, liked to live in it, and were sorry to leave it. In Birmingham they wanted a new society, to be called the Beauty Society.

The Hythe Surveyorship.—At a meeting of the Hythe Town Council on the 17th inst, the candidates for the office of surveyor were in attendance by request of the Council. They were Mr. Charles MacCallum, from the office of the borough surveyor of Dover, and Mr. William Martin, from the office of Mr. T. W. Collard, surveyor, of Canterbury. They were called in separately, and a few questions were put to them by the Mayor. Both were proposed and seconded, and four votes were given for Mr. Martin and six for Mr. MacCallum. Mr. MacCallum was therefore elected. It was resolved that the salary be 100*l.* per annum.

The Disconnexion of House Drains.—At a recent meeting of the Rotherham Town Council, Alderman Harrison moved "That the owners and occupiers of property in the borough be required to have all sink-drains and other house-drains disconnected with the sewers, and that the sink-drains, wherever practicable, be made to discharge above the top, and some distance from the grate of the gully; and that the necessary notice be given by the town clerk or surveyor for the carrying out of this resolution as speedily as possible." Mr. Morgan seconded the motion. Mr. Fell moved as an amendment that the matter be referred to the Health Committee. Alderman Wigfield seconded the amendment, which was agreed to by Alderman Harrison, and carried.

Steam Tram Cars.—Experiments have lately been made in Paris with a steam tram-car, which is said to be free from the defects of those previously tried, viz., slowness, cumbrousness, extreme costliness and ugliness, and noisiness. The brake-power is said to be capable of prompt and efficient application, and the engine is packed into a case which is neither extravagantly large nor intolerably ugly. The whole cost of feeding and working it is estimated at only 20 fr. a day. Between the Porte de Chatillon and St. Germain des Prés its mean pace,—up and down a slight incline,—was just 300 mètres to the minute,—that is to say, a rate of at least ten miles an hour, with a full load of passengers.

Trees for the Streets of Warrington.—Some six months ago the Paving and Sewerage Committee of the Warrington Town Council recommended that the experiment should be tried of planting a number of trees in some of the wider thoroughfares of the town. The idea was approved, and a number of trees have just been planted in Winwick-street. They are of two kinds, the Ontario poplar and the narrow-leaf English elm, and they will be planted alternately. Both kinds are of a very hardy and robust habit, and it is to be hoped that they will be able to survive the deleterious effects of chemical vapours and the other adverse influences to which vegetable life is more or less liable in a manufacturing town.

Cork Harbour.—At a meeting of the Cork Harbour Commissioners, on the 9th inst., the harbour engineer announced that the new dredge, built on the Clyde at a cost of 21,000*l.*, had made a satisfactory trial. He recommended that it be set at work immediately in forming a new channel from Passage to Cork, a distance of four miles, 200 ft. wide, and giving a depth of 14 ft. at low-water springs. The present channel is only 150 ft. wide. At high water it would be possible, with the new channel, to bring up a vessel drawing 25 ft. or 26 ft. The recommendation was adopted. It is expected that the new channel will be formed in sixteen months.

Soane Museum.—Sir Digby Wyatt has felt himself obliged, from failing health, to resign the trusteeship of the Soane Museum, to the great regret of his colleagues. The other trustees met on Thursday, the 16th inst., Mr. Sydney Smirke, R.A., in the chair, and unanimously elected Mr. David Mocatta, F.I.B.A., to fill the vacancy. Mr. Mocatta is the only surviving pupil of Sir John Soane, and doubtless his intimate acquaintanceship with the premises, in which he passed so many years of studentship, and his knowledge of every fragment and picture in the galleries, will render him a valuable member of this important trust.

Consecrated at Last.—The new Church of St. Mary, Denbigh, which has remained closed for two years, in consequence of the dispute about the reredos between the bishop and the building committee, was consecrated and opened for worship by the Bishop of St. Asaph on the 7th inst. The church, which has cost about 11,000*l.*, was erected for the purpose of superseding the old church of St. Hilary, on the Castle Hill, which has done duty from a time prior to the Reformation. The new church is to be used for English services in the mornings and Welsh services in the evenings.

"The Mint," Southwark.—The Metropolitan Board of Works has been asked by the Vestry of St. George the Martyr, Southwark, to render assistance in the construction of a new street from Blackman-street through Mint-street, into the Southwark Bridge-road, so as to make the Dover-road more easy of access for vehicles. It was stated that the surveyor (Mr. Hiscocks) had prepared the necessary plans, and some of the old rookeries in the Mint would be removed, and a great public improvement effected at a comparatively small cost.

Motya.—The Berlin correspondent of the *Morning Post* states that Dr. Henrich Schliemann has written from Palermo that he is now about to make excavations in the place of the old and once very celebrated town of Motya, inhabited by the Phœnicians and Carthagenians. The site of ancient Motya is on the western corner of the isle of Sicily, from six to seven miles north of Marsala. The town is said to have been destroyed by Dionysius 397 B.C.

Stone-cutting Machinery.—A recent invention by Mr. John Jordan, of Liverpool, consists in arranging and setting one or more circular saw-like tools a certain distance apart on a spindle, which spindle is attached to a more or less vertically moving shaft. The shaft moves in suitable guides in the cutting-machine. Above the upper end of this shaft a spring or other hammer is fixed, which is moved by a crank, and is driven by a pulley or otherwise.

The Graves Memorial Statue, Liverpool. The marble statue of the late Mr. S. R. Graves, formerly one of the members of Parliament for Liverpool, has now been completed by the sculptor, Sig. Fontana, and arrangements are in progress for placing it in the niche assigned to it in St. George's Hall. The ceremony of unveiling will take place on Wednesday, the 29th inst.

A Plea for an Open Space.—Mr. Francis George Heath, honorary secretary of the Parks Preservation Society, makes an earnest appeal to the trustees of the Sir John Cass charity to save from destruction the open space called "Tyler's Field," in the neighbourhood of South Hackney. Although held by the trustees as private property belonging to the Cassland estate, it has for years been fondly looked upon by the inhabitants of the neighbourhood as land kept sacred from the touch of the builder. "The land in question is some five or six acres in extent, is charmingly surrounded by trees, and beautifully turfed. But buildings are about to be erected over the whole of it."

Christ Church, Waterloo.—A member of this church has presented to the Rev. A. Jones a handsome pulpit, in place of the unsightly one lately in use. The pulpit is designed in the Perpendicular style of Gothic architecture, and consists of a moulded and traceried base and shaft, supporting an open-traceried body, and furnished with a flight of steps, with side handrail. The whole is executed in oak. The balusters of the stairs and movable book-desk are of brass. Messrs. W. & G. Audsley, Liverpool, were the architects, and Mr. Robert Upton executed the work.

New Liberal Club for Brighouse.—At a meeting recently held at Brighouse, a resolution was adopted approving of a scheme for the erection of a new Liberal Club, the amount to be raised in 3,000 shares of 1*l.* each. The architect, Mr. R. F. Rogerson, explained the plans, which showed that on the basement are keeper's kitchen, &c. On the ground-floor are the hall, a porter's room, two offices, refreshment-bar, and lavatory. On the right of the corridor there will be a library and committee-room. On the first-floor, the hall, 30 ft. by 45 ft., having a large platform.

New Belfry at Turriff.—The new belfry at Turriff parish church has just been completed, from the design of Mr. Smith, architect, of Aberdeen, by Mr. William Duguid, builder, Turriff. It stands 14 ft. above the roof of the church, and has a cast-iron finial extending 6 ft. higher. The aperture for the bell is 6 ft. high by 4 ft. broad, and the bell itself is about 3 ft. high by 2 ft. 8 in. wide at the mouth. Its weight is 6¼ cwts., exclusive of fittings. The founders are Messrs. J. Taylor & Co., Loughborough.

The Building of Dwelling Houses in Glasgow.—A Special Committee appointed to report on the "hollow-square" plan of building dwelling-houses, has submitted to the Glasgow Police Board a series of regulations which, it was explained, if carried out would put a stop to the system entirely. The committee also recommended that a representation as to the necessity of a uniform system of building regulations for the large towns of Scotland should be made to the Home Secretary.

Asphalte.—The Brunswick Asphalte Paving Company, now at work in Lee and Charlton, under the direction of Mr. Hirst, its manager, and Mr. J. F. Thorne, the Board's surveyor, have now completed the work in Lawn-terrace, about 6,770 superficial feet; the pathway in front of the shops at Upwood-terrace, Burnt Ash-lane (about 2,090 super. feet), and the piece in front of the North Kent Bank (520 super. feet), making, together with what has already been laid by them elsewhere for the Board of Works, about 63,303 superficial feet.

Proposed Gaol Extension at Manchester. At the last monthly meeting of the Manchester City Council, it was resolved, on the recommendation of the Watch Committee, to add a new fever hospital and infirmary to the City gaol. Alderman Grundy, in bringing the subject forward, said the expense of the gaol extension was expected to be about 22,000*l.*, the hospital for males and females 12,500*l.*, and the supplementary fever hospital 1,200*l.*, making in round numbers 40,000*l.*

Prizes for Designs.—The Linoleum Manufacturing Company (Limited) offer to designers, and students in Art Schools, prizes to the amount of 300*l.* for designs suitable to linoleum floor-cloth manufacture, subject to certain published conditions. The fact that Sir Digby Wyatt, Mr. R. Redgrave, R.A., and Mr. E. J. Poynter, A.R.A., have consented to make the awards suffices to show that the competitors will have fair play.

Smooth Castings.—By a recent invention by M. C. L. Collignon, of Liancourt, it is proposed to manufacture smooth and bright castings by the substitution of tar in lieu of the pulverised coal or founder's blacking hitherto used, in combination with green sand for making iron castings.

Value of City Freeholds.—At the Auction Mart, on Friday last week, Messrs. Sedgwick & Son, of Bedford-row, sold (with other London properties) the fee simple of 24, Cullum-street, Fenchurch-street, covering a superficial area of little over 280 ft., for 2,800*l.*, or about 10*l.* per square foot.

The Radcliffe Infirmary, Oxford.—At a special court of the Governors of this Infirmary, held on the 26th ult., it was resolved to accept the tender of Messrs. Wyatt, amounting to 4,088*l.* for the erection of new infectious wards, from plans by Mr. A. W. Blomfield, architect.

The Walker Art Gallery, Liverpool.—Mr. Philip Eberle has presented to the Town Council of Liverpool, as the directors of the Walker Art Gallery, Mr. A. J. Woolmer's picture of "The Morning after the Battle of Hastings."

Want Places!—The managers of the Dramatic College have been electing a new secretary for the institution. We are confidently informed that the number of applicants exceeded 1,000; the salary being 200*l. per annum.*

TENDERS

For the erection of new buildings in Coleman-street, City, for Mr. E. Burrell. Mr. J. Wimble, architect:—

Hill, Higgs, & Hill	£17,480 0 0
Fish	17,453 0 0
Lawrence	16,265 0 0
Patman & Co.	16,315 0 0
Coleman	16,175 0 0
Killby	15,963 0 0
Brass	15,875 0 0
Merritt & Ashby	15,555 0 0
Scrivener & White	11,756 0 0
Ashby & Horner	11,658 0 0

For restoration of No. 58, Waterloo-road, after fire. Mr. A. Bradley Cooke, architect:—

Hinvest	£685 0 0
Axford (accepted)	639 0 0

Accepted for the erection of a hall, residence, and other buildings, for the Victoria Hall Company (Limited), Reading. Mr. W. Ravenscroft, architect. Quantities supplied:—

Grover (Excavator, Bricklayer, &c.)	£1,585 0 0
East (Carpenter and Joiner)	937 10 0
Gocher (Plumber, &c.)	220 0 0
Huntley, Boome, & Stevens (Smith, Founder, &c.)	137 1 5

For restoration of Cowfold Church, Sussex. Messrs. Hans Price & Groshols, architects:—

Watson	£2,296 0 0
Steer	2,290 0 0
Oxley	2,000 0 0
Bysh	1,900 0 0
Fowler (accepted)	1,540 0 0

For finishing eleven houses and shops, Holborn Viaduct. Mr. E. N. Clifton, architect:—

Patrick	£34,821 0 0
Macey	34,436 0 0
Holland & Hannen	34,249 0 0
Ashby & Sons	32,000 0 0
Conder	32,585 0 0
Brass	31,592 0 0
Lawrence	30,780 0 0
Peto, Brothers	29,157 0 0

For alterations and repairs to the Mail Coach public-house, No. 1, Camomile-street, for Mr. Alfred Holtham. Mr. W. H. Gathercole, architect:—

Blenkarn	£288 0 0
Cohen	260 0 0
Banks	230 0 0

For rebuilding Nos. 805 and 805A, Commercial-road, Limehouse. Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

Palmer (accepted)	£1,796 0 0

For enlarging Dyce House, Streatham, and converting same into four shops, for Mr. Thomas Kidner. Messrs. H. M. & W. Grellier, architects:—

Walker	£2,162 0 0
Mason	1,587 0 0
Maxwell, Brothers (accepted)	1,359 0 0

TO CORRESPONDENTS.

J. A. (we do not propose to engrave view, but shall be happy to receive particulars).—F. C. (such heights have been given in a previous volume).—H. G.—A. G.—One of the Humbugged.—Another Humbugged by Brentford.—Dr. P.—T. M.—P. P. C.—A. von S.—E. L.—F.—J. B.—A. P.—Mr. W.—W. H. G.—A. R.—A. S.—Another of the Humbugged.—W. T.—H. M. C.—W. G. S.—H. D

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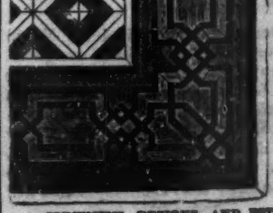

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